Rio Sugimura, M.D., Ph.D.
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Education:

2012	PhD	Stem Cell Biology, Stowers Institute for Medical Research, Kansas City, MO Thesis title (published in *Cell*): Investigating the functional roles of Flamingo and Frizzled8 in hematopoietic stem cells.
2008	MD	Osaka University

Research Experience:

2021- PI, The Centre for Translational Stem Cell Biology
- cancer immunotherapy

2020- PI, Assistant Professor, University of Hong Kong, HK
- cancer immunotherapy

2020 Visiting Professor, University of Pavia, Italy
- cancer immunotherapy

2018-2020 Research Scientist, Kyoto University, Japan
- analysis of signaling pathways in human developmental hematopoiesis

2014-2018 Postdoctoral Fellow, Boston Children's Hospital
- induction of hematopoietic stem cells from human pluripotent stem cells

2012-2014 Postgraduate Researcher, Stowers Institute for Medical Research
- analysis of morphogens in hematopoietic stem cell maintenance

Editorial Board:

2023-	Cell & Bioscience
2022-	Frontiers in Immunology
2022-	Frontiers in Cell and Developmental Biology
2022-	Scientific Reports
2021-	Differentiation
2021-	Cellular Reprogramming

Reviewer:

2022-	Journal of ImmunoTherapy for Cancer
2022-	Frontiers in Immunology
2021-	Frontiers in Cell and Developmental Biology
2021-	Developmental Cell
2021-	Development
2021-	eLife

Community Service and Professional Membership:

2023-	Committee member, Early Career Immunology
2023	Supervisor, iGEM HKU 2023 team
2023	Judge, iGEM Grand Jamboree 2023, Paris
2023-	Organizer, e-Seminar series of New PI Cell & Dev Bio Community

2023-	Communities Committee, NAVBO Northern America Vascular Biology Organization
2023-	Award Review Committee, SITC Society for Immunotherapy of Cancer
2023-	Abstract Reviewer, SITC Society for Immunotherapy of Cancer
2023-	Abstract Reviewer, ISSCR International Society of Stem Cell Research
2022-	Council member, FIMSA Federation of Immunological Societies of Asia-Oceania
2022	Organizing committee, New PI Cell & Dev Bio Symposium, Denmark
2021-	Organizer, Seminar series of Centre for Translational Stem Cell Biology
2021-	Organizer, Cancer immunology supergroup meetings, HKUMed
2021-2023	eLife Ambassador
2021-	Member, HK Society of Immunology
2021-	Silver Most Active Member, SITC Society for Immunotherapy of Cancer
2021-	Member, AAI American Association of Immunologists
2021-	Member, NAVBO Nothern America Vascular Biology Organization

Ongoing Funding (USD $):

2024-2025	Longevity Catalysis Award, National Academy of Medicine, $50,000
2023-2026	CRF, Co-I, $920,000
2023-2026	Seed CRF, $123,000
2023-2025	RGC GRF, $155,000
2023-2024	Gilead Liver Disease Program, $130,000
2022-2024	RGC ECS, $155,000
2021-2025	Seed Funding, $386,000
2021-2025	InnoHK Centre for Translational Stem Cell Biology, $1,610,000

Past Funding (USD $):

2021-2022	Platform for Technology Funding, $129,000
2020-2020	Uehara Foundation, $18,000
2019-2020	KAKENHI Early Career Grant, Japanese Government, $42,000
2019-2020	Takeda Science Foundation, $18,000
2019-2020	CiRA Challenge Grant, $25,000
2020	Research Scholarship of the University of Pavia, $10,000
2019-2020	iPS Academia Japan Fellowship, $18,000
2018-2020	Initiative for Excellent Young Researchers, $150,000
2018-2019	SMRF Fellowship, $8,000
2019	Kanehara Memorial Foundation, $2,000
2016-2018	American Society of Hematology Scholar Award, $100,000
2015-2016	Uehara Memorial Foundation CiRA, $10,000

Awards:

2023	Longevity Catalyst Award, National Academy of Medicine
2023	HKU-HKSTP DeepTech100
2022	Young Investigator Competition, Cells Tissues Organs
2019	Kanehara Memorial Foundation
2013	Genius Prize, Young Hematologist Meeting in Japan
2013	Abstract Achievement Award, American Society of Hematology
2009	March of Dimes Scholarship
2007	Kishimoto Memorial Scholarship

Invited talks:

2024	Keystone Meeting, Innate Immunity, Canada
2024	Gordon Research Conference, Immunoengineering, Italy
2023	Shenzhen Bay Lab, China
2023	BioCon Asia, Singapore
2023	National University of Singapore, Singapore
2023	Crick-HKU Symposium, UK
2023	EMBL Heidelberg, Germany
2023	CMMC-CECAD, Germany
2023	CIEMAT, Spain
2023	Gordon Research Conference, Phagocytes, USA
2023	Cambridge – CTSCB Symposium, Hong Kong
2023	HK Immunology Society Symposium, Hong Kong
2023	Li Ka Shing Faculty of Medicine Symposium, Hong Kong
2022	HCA Asia, Thailand
2022	Liver Research Series, University of Pittsburgh, USA
2022	Biomedical Engineering Series, University of North Carolina, USA
2022	New PI Cell & Developmental Biology Community Conference, Denmark
2022	Alessandro Volta Lecture, University of Pavia, Italy
2022	HK Developmental Biology Symposium, Hong Kong

Patents:

Practitioner's Docket Number 701039-087152-PCT. Publication number**:** 20190119643. HEMATOPOIETIC STEM AND PROGENITOR CELLS DERIVED FROM HEMOGENIC ENDOTHELIAL CELLS.

US Provisional Application No. 63/550,683 filed on 7 Feb 2024 Title: VASCULAR ORGANOIDS AND VASCULAR IMMUNE ORGANOIDS FROM HUMAN EXPANDED POTENTIAL STEM CELLS. TTO/R: IP01348

Publications:
Citations = 1,782. h index = 10 (Google Scholar, March 29, 2024),

1. Wan, X., Xiao, J., Tam, S., Cai, M., **Sugimura, R**., Wang, Y., Wan, X., Lin, Z., Wu, A., Yang, C. (2023) Integrating spatial and single-cell transcriptomics data using deep generative models with SpatialScope. **Nature Communications**
2. Cao, H., Xiang, Y., Zhang, S., Chao, Y., Guo, J., Ho, J.W.K., Huang, Y., Liu, P., **Sugimura, R.** (2023) PD-L1 regulates inflammatory programs of macrophages from human pluripotent stem cells. **Life Science Alliance.** DOI: 10.26508/lsa.202302461
3. Kitagawa, Y., Ikenaka, A., **Sugimura, R**., Niwa, A., Saito, M. (2023) ZEB2 and MEIS1 independently contribute to hematopoiesis via early hematopoietic enhancer activation. **iScience**
4. Chao, Y., Xiang, Y., Xiao, J., Zhang, S., Zheng, W., Wan, X., Li, Z., Gao, M., Wang, G., Chen, Z., Ebrahimkhani, M., Yang, C., Wu, A. R., Liu, P., Huang, Y., **Sugimura R.** (2023) Organoid-based single-cell spatiotemporal gene expression landscape of human embryonic development and hematopoiesis. **Signal Transduction and Targeted Therapy**

5. Poon YC, Wang C, Hang S, Liu P, **Sugimura R**. (2023) Generation of Natural Killer Cells from Human Expanded Potential Stem Cells. **Journal of Visualized Experiments.** DOI:10.3791/64608
6. Wang Y, Ma B, Liu X, Gao G, Che Z, Fan M, Meng S, Zhao X, **Sugimura R**, Cao H, Zhou Z, Xie J, Lin C, Luo Z. (2022) ZFP281-BRCA2 prevents R-loop accumulation during DNA replication. **Nature Communications.** 13.
7. **Sugimura, R**., Ohta, R., Mori, C., Li, A., Mano, T., Sano, E., Kosugi, K., Nakahata, T., Niwa, A., Saito, M., Torisawa, Y. (2020) Biomimetic Aorta-Gonad-Mesonephros on-a-Chip to Study Human Developmental Hematopoiesis**. Biomedical Microfluidics.** 22.
8. Ohta, R*., **Sugimura, R***., Niwa, A., Saito, M. (2019) Hemogenic Endothelium Differentiation from Human Pluripotent Stem Cells in A Feeder- and Xeno-Free Defined Condition**. Journal of Visualized Experiments. *equal contribution**
9. **Sugimura, R**., Jha, D., Han, A., Soria-Valles, C., da Rocha, E., Lu, Y., Goettel, J., Serrao, E., Rowe, R., Malleshaiah, M., Wong, I., Sousa, P., Zhu, T., Ditadi, A., Keller, G., Engelman, A., Snapper, S., Doulatov, S., Daley, G. (2017) Hematopoietic Stem and Progenitor Cells from Human Pluripotent Stem Cells. **Nature**. 545, 432-438.
10. Venkatraman, A., He, X.C., Thorvaldsen, J., **Sugimura, R**., Perry, P., Tao, F., Zhao, M., Christenson, M., Sanchez, R., Yu, J., Peng, L., Haug, J., Paulson, A., Li, H., Zhong, X., Clemens, T., Bartlomei, M., Li, L. (2013). Maternal-imprinting at H19-Igf2 locus maintains adult hematopoietic stem cell quiescence. **Nature**. 500, 345-349.
11. **Sugimura, R**., He, X.C., Venkatraman, A., Arai, F., Box, A., Semerad, C., Haug, J., Peng, L., Zhong, X., Suda, T., Li, L. (2012). Noncanonical Wnt signaling maintains hematopoietic stem cells in the niche. **Cell**. 150, 351-365.
12. Perry, J.M., He, X.C., **Sugimura, R**., Grindley, J.C., Haug, J.S., Ding, S., and Li, L. (2011). Cooperation between both Wnt/{beta}-catenin and PTEN/PI3K/Akt signaling promotes primitive hematopoietic stem cell self-renewal and expansion. **Genes & development**. 25, 1928-1942.

Preprints:

1. Chiu Wang Chau, Alex To, Rex K.H. Au-Yeung, Kaiming Tang, Yang Xiang, Degong Ruan, Lanlan Zhang, Hera Wong, Shihui Zhang, Man Ting Au, Seok Chung, Euijeong Song, Dong-Hee Choi, Pentao Liu, Shuofeng Yuan, Chunyi Wen, **Ryohichi Sugimura** (2024) SARS-CoV-2 infection activates inflammatory macrophages in vascular immune organoids. **Biorxiv.** doi.org/10.1101/2024.03.20.585837
2. Xue, Y., Chao, Y., Lin, X., Huang, Y., Ho, J.W.K., **Sugimura, R**. (2023) Single-cell mitochondrial variant enrichment resolved clonal tracking and spatial architecture in human embryonic hematopoiesis. **Biorxiv.** doi.org/10.1101/2023.09.18.558215

Reviews:

1. Wang TK, **Sugimura R** (2024) Breakthroughs in synthetic controlling strategies for precision in CAR-T therapy. **Progress in Molecular Biology and Translational Science.**
2. Luo EY, **Sugimura R** (2024) Taming microglia: the promise of engineered microglia in treating neurological diseases. **Journal of Neuroinflammation.**
3. Chen Z, **Sugimura R**, Zhang YS, Ruan C, Wen C. (2024) Organoids in concert: engineering in vitro models toward enhanced fidelity. **Aggregate.** doi/10.1002/agt2.478

4. Chan CL, **Sugimura R**. (2023) Unveiling the immune system ageing in single-cell resolution. **Journal of Leukocyte Biology.** doi.org/10.1093/jleuko/qiad136
5. Wong H., **Sugimura R**. (2023) Immune-epigenetic crosstalk in haematological malignancies. **Front. Cell Dev. Biol.** 11
6. Wang C. C., **Sugimura R**. (2023) Organoids in COVID-19: Can we break the glass ceiling? **Journal of Leukocyte Biology**. https://doi.org/10.1093/jleuko/qiad098
7. Lin, X., Sun, Y., Dong, X., Liu, Z., **Sugimura, R**.*, Xie, G.* (2023) IPSC-derived CAR-NK cells for cancer immunotherapy. **Biomed Pharmacother.** Jul 3;165:115123
   *** Co-corresponding**
8. Ma Z., **Sugimura R**.*, Lui K.O.* (2023) The role of m6A mRNA modification in normal and malignant hematopoiesis. **Journal of Leukocyte Biology.** doi.org/10.1093/jleuko/qiad061
   *** Co-corresponding**
9. Wang Y, **Sugimura R.** (2023). Ex vivo expansion of hematopoietic stem cells. **Exp. Cell Res.** doi: 10.1016/j.yexcr.2023.113599.
10. Yip S, Wang N, **Sugimura R**. (2023). Give them vasculature and immune cells – how to fill the gap of organoids. **Cells Tissues Organs**. doi: 10.1159/000529431.
    Awarded Young Investigator Competition
11. Hang S., Wang N., **Sugimura R**. (2023). T, NK, then macrophages: Recent advances and challenges in adaptive immunotherapy from human pluripotent stem cells. **Differentiation**. doi: 1016/j.diff.2023.01.001
12. Poon YC, **Sugimura R**. (2022). The prospect of genetic engineering Natural Killers cells for cancer immunotherapy. **Biology Open.**
13. Cao H, Gao S, Jogani R, **Sugimura R**. (2022). The tumor microenvironment reprograms immune cells. **Cellular Reprogramming.** Oct 26. doi: 10.1089/cell.2022.0047
14. Wang CY, Ting Cheung SP, **Sugimura R**. (2022). Combating challenges in CAR-T cells with engineering immunology. **Front. Cell Dev. Biol.** Oct 10;10:969020
15. Wang Chau C, **Sugimura R**. (2022). COVID-19: Locked in a pro-inflammatory state. **eLife.** 11
16. **Sugimura R**, Chao Y. (2022). Deciphering Innate Immune Cell-Tumor Microenvironment Crosstalk at a Single-Cell Level. **Front. Cell Dev. Biol.** 10
17. **Sugimura R**, Wang CY. (2022). The Role of Innate Lymphoid Cells in Cancer Development and Immunotherapy. **Front. Cell Dev. Biol.** 10
18. Gao S, **Sugimura R**. (2022). The Single-Cell Level Perspective of the Tumor Microenvironment and Its Remodeling by CAR-T Cells. **Cancer Treat. Res.** 183
19. Cao H, **Sugimura R**. (2022). Off-the-Shelf Chimeric Antigen Receptor Immune Cells from Human Pluripotent Stem Cells. **Cancer Treat. Res.** 183
20. Xiang Y, **Sugimura R**. (2021). Single-Cell Approaches to Deconvolute the Development of HSCs. **Cells**. doi.org/10.3390/cells10112876
21. Dong Y, Wong JSL, **Sugimura R**, Lam KO, Li B, Kwok GGW, Leung R, Chiu JWY, Cheung TT, Yau T. (2021). Recent Advances and Future Prospects in Immune Checkpoint (ICI)-Based Combination Therapy for Advanced HCC. **Cancers**. doi: 10.3390/cancers13081949
22. **Sugimura, R**. (2019). Derivation of Hematopoietic Stem and Progenitor Cells from Human Pluripotent Stem Cells. **Methods in Mol. Biol.** doi: 10.1007/978-1-4939-9524-0_3.
23. **Sugimura, R**. (2018). The significance and application of vascular niche in the development and maintenance of hematopoietic stem cells. **Int. Journal of Hematology.** doi: 10.1007/s12185-018-2450-2.
24. **Sugimura R.** (2015). Bioengineering Hematopoietic Stem Cell Niche toward Regenerative Medicine **Adv Drug Deliv Rev.** S0169-409X(15)00235-5.

25. He XC, Li Z, **Sugimura R**, Ross J, Zhao M, and Li L. (2014). Homing and migration assays of hematopoietic stem/progenitor cells. **Methods in Mol Biol.** 1185:279-84.
26. Perry, J., He, X., **Sugimura, R**., and Li, L. (2013). Stem Cell Dormancy: Maintaining a Reserved Population. **Advances in Molecular Biology and Medicine volume 1**, 119-132
27. **Sugimura, R**. and Li, L. (2011). Bone metastasis targets the endosteal hematopoietic stem cell niche. **IBMS BoneKEy**, 8, 381-384.
28. **Sugimura, R**., and Li, L. (2010a). Noncanonical Wnt signaling in vertebrate development, stem cells, and diseases. **Birth Defects Res C Embryo Today** 90, 243-256.
29. **Sugimura, R**., and Li, L. (2010b). Shifting in balance between osteogenesis and adipogenesis substantially influences hematopoiesis. **J Mol Cell Biol** 2, 61-62.

Press Releases:
Los Angeles Times, 2017. Scientists get closer to making personalized blood cells by using patients' own stem cells.
https://www.latimes.com/science/sciencenow/la-sci-sn-blood-stem-cells-20170517-story.html