Curriculum Vitae

Name: Masaru Ishii, M.D., Ph. D.
Title: Professor, Department of Immunology and Cell Biology,
Graduate School of Medicine & Frontier Biosciences, Osaka University
Suita, Osaka 565-0871, Japan.
Project Leader, Laboratory of Bioimaging and Drug Discovery,
National Institutes of Biomedical Innovation, Health and Nutrition
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Education:

1998	M.D.	Osaka University, Osaka, Japan
2005	Ph.D.	Osaka University, Osaka, Japan

Employments:

1998-1999	Resident in Osaka University Hospital
1999-2000	Resident in National Osaka-Minami Hospital
2000-2005	Assistant Professor of Pharmacology, Osaka University School of Medicine
2005-2009	Chief Investigator and Clinical Fellow in Rheumatology, National Osaka-Minami Medical Center (Sabbatical leave; 2006- 2008)
2006-2008	Visiting Postdoctoral Fellow (HFSP fellow), Laboratory of Immunology, National Institute of Allergy and Infectious Diseases, National Institutes of Health (USA), DHHS
2009-2011	Associate Professor, Laboratory of Biological Imaging, Immunology Frontier Research Center, Osaka University
2011-2013	Professor, Laboratory of Cellular Dynamics, Immunology Frontier Research Center, Osaka University
2013-present	Professor and Chairman, Department of Immunology and Cell Biology, Graduate School of Medicine & Frontier Biosciences, Osaka University
2019-present	Project Leader (adjunct), Laboratory of Bioimaging and Drug Discovery, National Institutes of Biomedical Innovation, Health and Nutrition
2020-present	Director, Nikon Imaging Center Osaka/Japan, Osaka University
2023-present	Vice Dean, Graduate School of Medicine, Osaka University

Awards and honors:

2022	The JSI Prize, Japanese Society for Immunology
2020	Osaka Science Prize
2020	JCR Scientific Award, Japanese College of Rheumatology
2019	Setsuro Ebashi Prize, The Japanese Pharmacological Society

2018	JSBMR Ogata Prize, The Japanese Society for Bone and Mineral Research
2014	The JSPS Prize
2013	The Young Investigator Award, The Japanese Medical Association
2013	JSBMR Distinguished Scientist Prize, The Japanese Society for Bone and Mineral Research
2011	The Best Young Investigator Award, Japan Foundation for Aging and Heath
2010	Astellas Award for the Best Biomedical Research, Astellas Foundation for Research on Metabolic Disorders
2010	The Young Scientists' Prize, The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology
2007	Young Investigator's Award, Japanese College of Rheumatology
2006	Young Investigator's Award, Japanese Society of Allergology.
1998	Dr. Yuichi Yamamura Memorial Prize, Osaka University.

Membership:
- The Japanese College of Rheumatology (Executive Board Member)
- The Japanese Society for Bone and Mineral Research (Vice President)
- The Japanese Society for Inflammation and Regeneration (Executive Board Member)
- The Japanese Society for Osteoimmunology (Executive Board Member)
- The Japanese Society of Immunology (Voting Member)
- The Japanese Pharmacological Society (Voting Member)
- The Molecular Biology Society of Japan
- The Japanese Society of Internal Medicine
- International Union of Pharmacology, Immunopharmacology section (Secretary)

Research Summary:
One of the major research targets in Ishii's laboratory has been the bone and immune systems, elucidating the complex network in vivo. We proposed an original concept that the regulation of migration and positioning of osteoclast precursors, e.g. by chemokines and lipid mediators, is a novel point of control for bone homeostasis, and is also a clinically relevant therapeutic target. We further unravel the whole regulatory system in bone biology. As physician-scientists, we will try to develop the new remedy for treating bone resorptive disorders. The other direction of our laboratory is the development of the novel imaging techniques and the application of this methodology to the elucidation of a wide array of biological phenomenon. For example, we are employing this new method to the visualization of the behaviors of various types of hematopoietic cells in the bone marrow to further clarify their modes of migration and differentiation in vivo. Bone marrow is important as a reservoir as well as a maturation site for neutrophils and monocytes, and also it has recently been proposed to have a special location for maintaining pluripotent hematopoietic stem cells or leukemic stem cells. We have also been using our imaging technology to observe various tissues other than bone, including liver, lung, tumor etc. at the single cell level. Thus, the intravital imaging technology

provides a rich spectrum of cellular movement and localization to analyze.

Selected publications:

1) Miyamoto Y, Kikuta J, Matsui T, Hasegawa T, Fujii K, Okuzaki D, Liu Y-C, Yoshioka T, Seno S, Motooka D, Uchida Y, Yamashita E, Kobayashi S, Eguchi H, Morii E, Tryggvason K, Shichita T, Kayama H, Atarashi K, Kunisawa J, Honda K, Takeda K, Ishii M. (2024) Periportal macrophages protect against commensal-driven liver inflammation. ***Nature***, 629: 901–909.

2) Taniguchi S, Matsui T, Kimura K, Funaki S, Miyamoto Y, Uchida Y, Sudo T, Kikuta J, Hara T, Motooka D, Liu Y-C, Okuzaki D, Morii E, Emoto N, Shintani Y, Ishii M. (2023) In vivo induction of activin A-producing alveolar macrophages supports the progression of lung cell carcinoma. ***Nat. Commun.***, 14(1): 143.

3) Uenaka M, Yamashita E, Kikuta J, Morimoto A, Ao T, Mizuno H, Furuya M, Hasegawa T, Tsukazaki H, Sudo T, Nishikawa K, Okuzaki D, Motooka D, Kosaka N, Sugihara F, Boettger T, Braun T, Ochiya T, Ishii M. (2022) Osteoblast-derived vesicles induce a switch from bone-formation to bone-resorption *in vivo*. ***Nat. Commun.***, 13: 1066.

4) Morimoto A, Kikuta J, Nishikawa K, Sudo T, Uenaka M, Furuya M, Hasegawa T, Hashimoto K, Tsukazaki H, Seno S, Nakamura A, Okuzaki D, Sugihara F, Ninomiya A, Yoshimura T, Takao-Kawabata R, Matsuda H, Ishii M. (2021) SLPI is a critical mediator that controls PTH-induced bone formation. ***Nat. Commun***., 2(1):2136.

5) Sudo T, Motomura Y, Okuzaki D, Hasegawa T, Yokota T, Kikuta J, Ao T, Mizuno H, Matsui T, Motooka D, Yoshizawa R, Nagasawa T, Kanakura Y, Moro K, Ishii M. (2021) Group 2 innate lymphoid cells support hematopoietic recovery under stress conditions. ***J. Exp. Med.***, 218(5): e20200817.

6) Matsui T, Tamoto R, Iwasa A, Mimura M, Taniguchi S, Hasegawa T, Sudo T, Mizuno H, Kikuta J, Onoyama I, Okugawa K, Shiomi M, Matsuzaki S, Morii E, Kimura T, Kato K, Kiyota Y, Ishii M. (2020) Real-time quantitative diagnostic method for human cervical cancers based on nonlinear optics with near-infrared excitation. ***Cancer Res***, 80(17):3745-3754.

7) Hasegawa T, Kikuta J, Sudo T, Matsuura Y, Simmons S, Ebina K, Hirao M, Okuzaki D, Yoshida Y, Hirao A, Kalinichenko, VV, Yamaoka K, Takeuchi T, Ishii M (2019) Identification of a novel arthritis-associated osteoclast precursor macrophage regulated by FoxM1. ***Nat Immunol***, 20(12):1631-1643

8) Matsuura Y, Kikuta J, Kishi Y, Hasegawa T, Okuzaki D, Hirano T, Minoshima M, Kikuchi K, Kumanogoh A, Ishii M. (2018) In vivo visualization of different modes of action of biologic DMARDs inhibiting osteoclastic bone resorption. ***Ann. Rheum. Dis***., 77(8):1219-1225.

9) Furuya M, Kikuta J, Fujimori S, Seno S, Maeda H, Shirazaki M, Uenaka M, Mizuno H, Iwamoto Y, Morimoto A, Hashimoto K, Ito T, Isogai Y, Kashii M, Kaito T, Ohba S, Chung Ui, Lichtler AC, Kikuchi K, Matsuda H, Yoshikawa H, Ishii M. (2017) Direct cell-cell contact between mature osteoblasts and osteoclasts dynamically controls their functions in vivo. ***Nat.***

Commun., 9(1):300.
10) Maeda H, Kowada T, Kikuta J, Furuya M, Shirazaki M, Mizukami S, Ishii M*, Kikuchi K*. (2016) Real-time intravital imaging of pH variation associated with cell osteoclast activity and motility using designed small molecular probe. ***Nat Chem Biol.***, 12(8):579-85
11) Nishikawa K, Iwamoto Y, Kobayashi Y, Katsuoka F, Kawaguchi S, Tsujita T, Nakamura T, Kato S, Yamamoto M, Takayanagi H, Ishii M. (2015) Dnmt3a regulates osteoclast differentiation by coupling to an S-adenosyl methionine-producing metabolic pathway. ***Nat. Med.***, 21(3):281-7.
12) Kikuta J, Kawamura S, Okiji F, Shirazaki M, Sakai S, Saito H, Ishii M (2013) S1P-mediated osteoclast precursor monocyte migration is a critical point of control in antibone-resorptive action of active vitamin D. ***Proc. Natl. Acad. Sci. USA***, 110(17): 7009-13.
13) Kikuta J, Wada Y, Kowada T, Wang Z, Sun-Wada G-H, Nishiyama I, Mizukami S, Maiya N, Yasuda H, Kumanogoh A, Kikuchi K, Germain RN, Ishii M*. (2013) Dynamic visualization of RANKL and Th17-mediated osteoclast function. ***J. Clin. Invest***., 123(2): 866-873.
14) Kotani M, Kikuta J, Klauschen F, Chino T, Kobayashi Y, Yasuda H, Tamai K, Miyawaki A, Kanagawa O, Tomura M, Ishii M*. (2013) Systemic circulation and bone recruitment of osteoclast precursors tracked by using fluorescent imaging techniques. ***J. Immunol.,*** 190(2):605-12.
15) Ishii M*, Kikuta J, Shimazu Y, Meier-Schellersheim M, Germain RN. (2010) Chemorepulsion by blood S1P regulates osteoclast precursor mobilization and bone remodeling in vivo. ***J. Exp. Med.,*** 207: 2793-2798.
16) Ishii M, Egen JG, Klauschen F, Meier-Schellersheim M, Saeki Y, Vacher J, Proia RL, Germain RN. (2009) Sphingosine-1-phosphate mobilizes osteoclast precursors and regulates bone homeostasis. ***Nature***, 458 (7237): 524-528.
(total: 176 publications, h-index 59, as of August 2024).