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Current Appointment Assistant Professor
 Department of Orthopaedics
 University of Maryland, Baltimore

Education

1999 M.D. School of Medicine, Osaka University, Osaka, Japan
 2007 Ph.D. Division of Gene Therapy Science, Department of Molecular Therapeutics
 Graduate School of Medicine, Osaka University, Osaka, Japan

Post Graduate Education and Training

Clinical

1999-2000	Orthopedic Residency	Department of Orthopedic Surgery, Osaka University Hospital, Osaka, Japan
2000-2001	Orthopedic Residency	Department of Orthopedic Surgery, Shinshu University Hospital, Nagano, Japan
2001-2002	Orthopedic Residency	Department of Orthopedic Surgery, Kawanishi City Hospital, Hyogo, Japan
2002-2007	Orthopedic Fellowship	Department of Orthopedic Surgery, Osaka University, Osaka, Japan

Research

2007-2012	Postdoctoral Fellowship	Division of Oncology, The Children's Hospital of Philadelphia/University of Pennsylvania, Philadelphia, PA
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Employment History

Medical

2007-2007	Department of Orthopedic Surgery, Ashiya Municipal Hospital, Hyogo, Japan
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Research

2012-2013	Research Scientist (full-time) Division of Oncology, The Children's Hospital of Philadelphia, Philadelphia, PA
2013-2017	Sr. Research Scientist (full-time) Center for Childhood Cancer and Blood Diseases, The Research Institute at Nationwide Children's Hospital, Columbus, OH
2018-Present	Assistant Professor (full-time) Department of Orthopaedics, The University of Maryland, Baltimore, MD
2018-Present	Special Volunteer in Dr. Leikin's laboratory Section on Physical Biochemistry, Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), Bethesda, MD

Professional Society Memberships

1999-Present	Member, The Japanese Orthopaedic Association (JOA)
2010-Present	Member, International Society for Cellular Therapy (ISCT)
2012-Present	Member, The American Society for Bone and Mineral Research (ASBMR)

Honors and Awards

2007	The Most Outstanding Ph.D Student Award of the Year in Osaka University Graduate School of Medicine
2010	The Best Abstract Award at the 16 th Annual Meeting of International Society for Cellular Therapy
2011	The Best Poster Award at the 21 st Annual Children's Hospital of Philadelphia Research (CHOP) Poster Day
2012	The Best Poster Award at the 9 th Annual Scientific Symposium of Penn Center for Musculoskeletal Disorders
2015	Invited Mentee, U.S. Bone and Joint Initiative Young Investigator Program
2019	ASBMR Mid-Career Faculty Travel Award 2019

Patents

2007	Title: Mesenchymal stem cell inducer, tissue regeneration promoter and method of preparing mesenchymal stem cell. International Filing Date: 3/8/2006. Publication Date: 8/2/2007. International Application No.: PCT/JP2006/315406. Publication No.: WO/2007/015546.
2017	Title: Stimulation of bone growth using Apolipoprotein E International Filing Date: 3/22/2017 Publication Date: 9/28/2017 International Application No.: PCT/US2017/23586 Publication No.: WO/2017/165515 A1

PUBLICATIONS

Peer-reviewed journal articles

1. Horiuchi H, Saito N, Kinoshita T, Wakabayashi S, Tsutsumimoto T, **Otsuru S** and Takaoka K. Enhancement of recombinant human bone morphogenetic protein-2 (rhBMP-2)-induced new bone formation by concurrent treatment with parathyroid hormone and a phosphodiesterase inhibitor, pentoxifylline, **J Bone Miner Metab** 22:329-334, 2004. PMID: 15221490
2. Hiraoka K, Yamamoto S, **Otsuru S**, Nakai S, Tamai K, Morishita R, Ogihara T and Kaneda Y. Enhanced Tumor-Specific Long-Term Immunity of Hemagglutinating Virus of Japan-Mediated Dendritic Cell-Tumor Fused Cell Vaccination by Coadministration with CpG Oligodeoxynucleotides, **The Journal of Immunology** 173:4297-4307, 2004. PMID: 15383558
3. **Otsuru S**, Tamai K, Yamazaki K, Yoshikawa H and Kaneda Y. Bone marrow-derived osteoblast progenitor cells in circulating blood contribute to ectopic bone formation in mice, **Biochemical and Biophysical Research Communications** 354:453-458, 2007. PMID: 17239347
4. **Otsuru S**, Tamai K, Yamazaki T, Yoshikawa H and Kaneda Y. Circulating bone marrow-derived osteoblast progenitor cells are recruited to the bone-forming site by the CXCR4/Stromal cell-derived factor-1 pathway, **Stem Cells** 1: 223-234, 2008. PMID: 17932420
5. Chino T, Tamai K, Yamazaki T, **Otsuru S**, Kikuchi Y, Nimura K, Endo M, Nagai M, Uitto J, Kitajima Y and Kaneda Y. Bone marrow cell transfer into fetal circulation can ameliorate genetic skin diseases by providing fibroblasts to the skin and inducing immune tolerance, **American Journal of Pathology** 173: 803-814, 2008. PMID: 18688022, PMC2527073
6. Jethva R, **Otsuru S**, Dominici M and Horwitz EM. Cell therapy for disorders of bone, **Cytotherapy**, 11: 3-17, 2009. PMID: 19191055
7. Kimura Y, Miyazaki N, Hayashi N, **Otsuru S**, Tamai K, Kaneda Y and Tabata Y. Controlled release of bone morphogenetic protein-2 enhances recruitment of osteogenic progenitor cells for de novo generation of bone tissue, **Tissue Engineering Part A**, 16: 1263-1270, 2010. PMID: 19886805
8. Jiang Q, Oldenburg R, **Otsuru S**, Grand-Pierre AE, Horwitz EM and Uitto J. Parabiotic heterogenetic pairing of Abcc6^{-/-}/Rag1^{-/-} mice and their wild-type counterparts halts ectopic mineralization in a murine model of pseudoxanthoma elasticum, **American Journal of Pathology**, 176: 1855-1862, 2010. PMID: 20185580, PMC2843475
9. Grisendi G, Anneren C, Cafarelli L, Sternieri R, Veronesi E, Cervo GL, Luminari S, Maur M, Frassoldati A, Palazzi G, **Otsuru S**, Bambi F, Paolucci P, Conte P, Horwitz E and Dominici M. GMP-manufactured density gradient media for optimized mesenchymal stromal/stem cell isolation and expansion, **Cytotherapy**, 12: 466-477, 2010. PMID: 20353309
10. Chen X, Hofmann TJ, **Otsuru S**, Jethva R, Lind C, Monos D and Horwitz EM. A strategy for single nucleotide polymorphism analysis of chimerism for somatic cell therapy, **Cytotherapy**, 12: 1035-1043, 2010. PMID: 20429790
11. **Otsuru S**, Hofmann TJ, Rasini V, Veronesi E, Dominici M and Horwitz EM. Osteopoietic engraftment after bone marrow transplantation: Effect of inbred strain of mice, **Experimental Hematology**, 38: 836-844, 2010. PMID: 20447443, PMC3392015
12. Tamai K, Yamazaki T, Chino T, Ishii M, **Otsuru S**, Kikuchi Y, Iinuma S, Saga K, Nimura K, Shimbo T, Umegaki N, Katayama I, Miyazaki JI, Takeda J, McGrath JA, Uitto J and Kaneda Y. PDGFR α -positive cells in bone marrow are mobilized by high mobility group box 1 (HMGB1) to regenerate injured epithelia. **Proc Natl Acad Sci USA**, 108: 6609-6614, 2011. PMID: 21464317, PMC3081004 (This article was recommended by "Faculty of 1000").
13. **Otsuru S**, Rasini V, Bussolari R, Hofmann TJ, Dominici M and Horwitz EM. Cytokine-induced osteopoietic differentiation of transplanted marrow cells, **Blood**, 118: 2358-2361, 2011. PMID: 21715305, PMC3162360
14. **Otsuru S**, Gordon PL, Shimono K, Jethva R, Marino R, Philips CL, Hofmann TJ, Veronesi E, Dominici M, Iwamoto M and Horwitz EM. Transplanted bone marrow mononuclear cells and

- MSCs impart clinical benefit to children with osteogenesis imperfecta through different mechanisms, **Blood**, 120: 1933-1941, 2012. PMID:22829629, PMC3433095 (This article was recommended by "Faculty of 1000").
15. **Otsuru S**, Hofmann TJ, Olson TS, Dominici M and Horwitz EM. Improved Isolation and Expansion of Bone Marrow Mesenchymal Stromal Cells Using a Novel Marrow Filter Device, **Cytotherapy**, 15: 146-153, 2013. PMID:23321326
 16. Hofmann TJ*, **Otsuru S***, Marino R, Rasini V, Veronesi E, Murgia A, Lahti J, Boyd K, Dominici M and Horwitz EM. Transplanted murine long-term repopulating hematopoietic cells can differentiate to osteoblasts in the marrow stem cell niche, **Molecular Therapy**, 21: 1224-1231, 2013. PMID:23587920, PMC3677312 (*The first two authors contributed equally to this work).
 17. Olson TS, Caselli A, **Otsuru S**, Hofmann TJ, Williams R, Paolucci P, Dominici M and Horwitz EM. Megakaryocytes promote murine osteoblastic HSC niche expansion and stem cell engraftment after radioablative conditioning, **Blood**, 121: 5238-5249, 2013. PMID:23667055, PMC3695366
 18. Caselli A, Olson TS, **Otsuru S**, Chen X, Hofmann TJ, Nah HD, Grisendi G, Paolucci P, Dominici M and Horwitz EM. IGF-1-mediated osteoblastic niche expansion enhances long-term hematopoietic stem cell engraftment after murine bone marrow transplantation, **Stem Cells**, 10: 2193-2204, 2013. PMID:23818291
 19. Marino R*, **Otsuru S***, Hofmann TJ*, Olson TS, Rasini V, Veronesi E, Boyd K, Gaber MW, Martinez C, Paolucci P, Dominici M and Horwitz EM. Delayed marrow infusion in mice enhances hematopoietic and osteopoietic engraftment by facilitating transient expansion of the osteoblastic niche. **Biology of Blood and Marrow Transplantation**, 19: 1566-1573, 2013. PMID:23916672 (*These authors contributed equally to this work).
 20. Asai S, **Otsuru S**, Candela ME, Cantley L, Uchibe K, Hofmann TJ, Zhang K, Wapner KL, Soslowsky LJ, Horwitz EM and Iwamoto ME. Tendon progenitor cells in injured tendons have strong chondrogenic potential: The CD105-negative subpopulation induces chondrogenic degeneration. **Stem Cells**, 32: 3266-3277, 2014. PMID:25220576, PMC4245375
 21. Grisendi G, Finetti E, Manganaro D, Cordova N, Montagnani G, Spano C, Prapa M, Guarneri V, **Otsuru S**, Horwitz EM, Mari G and Dominici M. Detecton of microparticles from human red blood cells by multiparametric flow cytometry. **Blood Transfusion**, 13: 274-280, 2015. PMID:25369588, PMC4385076
 22. **Otsuru S**, Hofmann TJ, Raman P, Olson TS, Guess AJ, Dominici M and Horwitz EM. Genomic and functional comparison of mesenchymal stromal cells prepared using two isolation methods, **Cytotherapy**, 17: 262-270, 2015. PMID: 25659640
 23. Shudo Y, Cohen JE, MacArthur JW, Goldstone AB, **Otsuru S**, Trubelja A, Patel J, Edwards BB, Hung G, Fairman AS, Brusalis C, Hiesinger W, Atluri P, Hiraoka A, Miyagawa S, Sawa Y and Woo YJ. A tissue engineered chondrocyte cell-sheet induces extracellular matrix modification to enhance ventricular biomechanics and attenuate myocardial stiffness in ischemic cardiomyopathy, **Tissue Engineering Part A**, 21: 2515-2525, 2015. PMID: 26154752, PMC: 4605354
 24. D'Souza N, Rossignoli F, Golinelli G, Grisendi G, Spano C, Candini O, **Otsuru S**, Catani F, Paolucci P, Horwitz EM and Dominici M. Mesenchymal stem/stromal cells as a delivery platform in cell and gene therapies, **BMC Medicine**, 13: 186, 2015. PMID: 26265166, PMC: 4534031
 25. Kaito T, Morimoto T, Kanayama S, **Otsuru S**, Kashii M, Makino T, Kitaguchi K, Furuya M, Chijimatsu R, Ebina K, and Yoshikawa H. Modeling and remodeling effects of intermittent administration of teriparatide (parathyroid hormone 1-34) on bone morphogenetic protein-induced bone in a rat spinal fusion model, **Bone Reports**, 5:173-180, 2016. PMID: 28580385
 26. **Otsuru S**, Overholt KM, Olson TS, Hofmann TJ, Guess AJ, Velazquez VM, Kaito T, Dominici M and Horwitz EM. Hematopoietic derived cells do not contribute to osteogenesis as osteoblasts, **Bone**, 94: 1-9, 2017. PMID: 27725318
 27. Guess AJ, Daneault B, Wang R, Bradbury H, La Perle KMD, Fitch J, Hedrick SL, Hamelberg E, Astbury C, White P, Overholt KM, Rangarajan H, Abu-Arja R, Devine SM, **Otsuru S**, Dominici M,

- O'Donnell L, and Horwitz EM. Safety Profile of GMP Manufactured Interferon γ Primed Mesenchymal Stem/Stromal Cells for Clinical Trials, **Stem Cells Translational Medicine**, 6, 1868-1879, 2017. PMID: 28887912
28. Overholt KM, **Otsuru S**, Olson TS, Guess AJ, Velazquez VM, Desbourdes L, Dominici M, and Horwitz EM. Identification of a murine CD45^{neg} F4/80^{lo} HSC-derived marrow endosteal cell associated with donor engraftment after HCT, **Blood Advances**, 1, 2667-2678, 2017. PMID: 29296920
 29. Kaito T, Morimoto T, Mori Y, Kanayama S, Makino T, Takenaka S, Sakai Y, **Otsuru S**, Yoshioka Y, and Yoshikawa H. BMP-2/7 heterodimer strongly induces bone regeneration in the absence of increased soft tissue inflammation. **The Spine Journal**, 18, 139-146, 2018. PMID: 28735764
 30. Kanayama S, Kaito T, Kitaguchi K, Ishiguro H, Hashimoto K, Chijimatsu R, **Otsuru S**, Takenaka S, Makino T, Sakai Y, Myoui A, and Yoshikawa H. ONO-1301 enhances in vitro osteoblast differentiation and in vivo bone formation induced by bone morphogenetic protein, **Spine**, 43, E616-E624, 2018. PMID: 29016438
 31. **Otsuru S**, Desbourdes L, Guess AJ, Hofmann TJ, Relation T, Kaito T, Dominici M, Iwamoto M, and Horwitz EM. Extracellular vesicles released from mesenchymal stem/stromal cells stimulate bone growth in osteogenesis imperfecta, **Cytotherapy**, 20, 62-73, 2018. PMID: 29107738
 32. Relation T, Yi T, Guess AJ, La Perle K, **Otsuru S**, Hasgur S, Dominici M, Breuer CK, and Horwitz EM. Intratumoral delivery of interferon γ -secreting MSCs repolarizes tumor-associated macrophages and suppresses neuroblastoma proliferation in vivo. **Stem Cells**, 36 (6), 915-924, 2018. PMID: 29430789
 33. Miyachi H, Reinhardt JW, **Otsuru S**, Tara S, Nakayama H, Yi T, Lee YU, Miyamoto S, Shoji T, Sugiura T, Breuer CK, and Shinoka T. Bone marrow-derived mononuclear cell seeded bioresorbable vascular graft improves acute graft patency by inhibiting thrombus formation via platelet adhesion. **International Journal of Cardiology**, 1; 266: 61-66, 2018. PMID: 29887474
 34. Noguchi T, Ebina K, Hirao M, **Otsuru S**, Guess AJ, Kawase R, Ohama T, Yamashita S, Etani Y, Okumura G, and Yoshikawa H. Apolipoprotein E plays crucial roles in maintaining bone mass by promoting osteoblast differentiation via ERK1/2 pathway and by suppressing osteoclast differentiation via c-Fos, NFATc1, and NF- κ B pathway. **Biochemical and Biophysical Research Communications**, 503 (2), 644-650, 2018. PMID:29906458
 35. Guess AJ, Abzug JM, and **Otsuru S**. Use of mesenchymal stem/stromal cells for pediatric orthopedic applications. **Techniques in Orthopaedics**, 34 (4), 257-265, 2019.
 36. Scheiber AL, Guess AJ, Kaito T, Abzug JM, Enomoto-Iwamoto M, Leikin S, Iwamoto M, and **Otsuru S**. Endoplasmic reticulum stress is induced in growth plate hypertrophic chondrocytes in G610C mouse model of osteogenesis imperfecta. **Biochemical and Biophysical Research Communications**, 509 (1), 235-240, 2019. PMID:30579604, PMCID:PMC6370306
 37. Usami Y, Gunawardena AT, Francois NB, **Otsuru S**, Takano H, Hirose K, Matsuoka M, Suzuki A, Huang J, Qin L, Iwamoto M, Yang W, Toyosawa S, and Enomoto-Iwamoto M. Possible contribution of Wnt-responsive chondroprogenitors to the postnatal murine growth plate. **J Bone Mineral Research**, 34 (5), 964-974, 2019. PMID:30602070. PMCID:PMC6536347.
 38. Ishiguro H, Kaito T, Yarimitsu S, Hashimoto K, Okada R, Kushioka J, Chijimatsu R, Takenaka S, Makino T, Sakai Y, Moriguchi Y, **Otsuru S**, Hart DA, Fujie H, Nakamura N, and Yoshikawa H. Intervertebral disc regeneration with an adipose mesenchymal stem cell-derived tissue-engineered construct in a rat nucleotomy model. **Acta Biomaterialia**, 87, 118-129, 2019. PMID:30690206.
 39. Izumi S, **Otsuru S**, Adachi N, Akabudike N, Enomoto-Iwamoto M. Control of glucose metabolism is important in tenogenic differentiation of progenitors derived from human injured tendons. **PLOS ONE**, 14 (3), e0213912, 2019. PMID:30883580, PMCID:PMC6422258.
 40. Okada R, Kaito T, Ishiguro H, Kushioka J, **Otsuru S**, Kanayama S, Bal Z, Kitaguchi K, Hashimoto K, Makino T, Takenaka S, Sakai Y and Yoshikawa H. Assessment of effects of rhBMP-2 on interbody fusion with a novel rat model. **The Spine Journal**, 20 (5), 821-829, 2020. PMID:31901554.

41. Wilson K, Usami Y, Hogarth D, Scheiber AL, Tian H, Oichi T, Wei Y, Qin L, **Otsuru S**, Toyosawa S, Iwamoto M, Abzug JM and Enomoto-Iwamoto M. Analysis of association between morphometric parameters of growth plate and bone growth of tibia in mice and humans. **Cartilage**, in press. PMID:31997656.
42. Go H, Maeda H, Miyazaki K, Maeda R, Kume Y, Namba F, Momoi N, Hashimoto K, **Otsuru S**, Kawasaki Y, Hosoya M and Dennery PA. Extracellular vesicle miRNA-21 is a potential biomarker for predicting chronic lung disease in premature infants. **Am J Physiol Lung Cell Mol Physiol**, 318 (5), L845-L851, 2020. PMID:32191117.
43. Iyer SR, Scheiber AL, Yarowsky P, Henn F, **Otsuru S** and Lovering RM. Exosomes isolated from platelet-rich plasma and mesenchymal stem cells promote recovery of function after muscle injury. **Am J Sports Medicine**, 48 (9), 2277-2286, 2020. PMID:32543878.
44. Miyachi H, Tara S, Otsuru S, Yi T, Lee YU, Drews JD, Nakayama H, Miyamoto S, Sugiura T, Shoji T, Breuer CK and Shinoka T. Imatinib attenuates neotissue formation during vascular remodeling in an arterial bioresorbable vascular graft. **JVS:Vascular Science**, 1, 57-67, 2020.
45. Oichi T, **Otsuru S**, Usami Y, Enomoto-Iwamoto M and Iwamoto M. Wnt signaling in chondroprogenitors during long bone development and growth. **Bone**, in press. PMID:32380258.

Complete List of Published Work in My Bibliography:

<http://www.ncbi.nlm.nih.gov/sites/myncbi/satoru.otsuru.1/bibliography/40635717/public/?sort=date&direction=ascending>

PRESENTATIONS

Invited Lectures

1. **Otsuru S**. The mechanism of in vivo bone formation by bone marrow derived osteoblast progenitor cells. **5th Japan Conference on Bone & Joint Diseases. (2006)**
2. **Otsuru S**. The mechanism of recruitment of bone marrow derived osteoblast progenitor cells in bone formation. **5th Matsumoto Bone Forum. (2006)**
3. **Otsuru S**. The mechanism of recruitment of bone marrow derived osteoblast progenitor cells in bone formation. **13th BMP (bone morphogenetic protein) meeting. (2006)**
4. **Otsuru S**. Systemic MSC Therapy for Genetic and Acquired Orthopedic Disorders. **2nd Meeting of Asian Cellular Therapy Organization. (2011)**
5. **Otsuru S**. A New Efficient Device for Bone Marrow MSC Isolation. **MSC 2013. (2013)**
6. **Otsuru S**. MSC Microvesicles As Mediators of Tissue Repair. **International Society of Cellular Therapy North America 2013 Regional Meeting. (2013)**
7. **Otsuru S**. Mechanism of Bone Growth After MSC Infusion. **Department of Orthopedic Surgery, Osaka University, Japan. (2015)**
8. **Otsuru S**. Mechanism of Bone Growth After MSC Infusion. **Department of Stem Cell Therapy Science, Osaka University, Japan. (2015)**
9. **Otsuru S**. Understanding the mechanism of bone growth after MSC infusion. **The Orthopaedic Research Club at PENN Center for Musculoskeletal Disorders. (2016)**
10. **Otsuru S**. Developing novel therapy for osteogenesis imperfecta. **The Orthopaedic Department Research Seminar Series at Emory University. (2017)**
11. **Otsuru S**. Development of novel therapies for osteogenesis imperfecta. **The Orthopaedic Research Meeting at University of Maryland. (2017)**
12. **Otsuru S**. MSC therapy and beyond for osteogenesis imperfecta. **Stem Cell and Regenerative Biology Program at Penn State Hershey Medical Center and College of Medicine. (2019)**
13. **Otsuru S**. Endoplasmic reticulum disruption in growth plate hypertrophic chondrocytes is responsible for growth deficiency in osteogenesis imperfecta. **Matrix Biology Seminar at NIH. (2020)**

Oral Presentations

1. **Otsuru S**, Kobayashi S, Saito N, Nawata M, Horiuchi H and Takaoka K. Two cases that were performed total hip replacement with S-ROM stem for secondary hip dysplasia after valgus hip osteotomy. **96th The Central Japan Association of Orthopaedic Surgery and Traumatology. (2001)**
2. **Otsuru S**, Tamai K, Yamazaki T, Kikuchi Y, Chino T and Kaneda Y. Bone marrow stem cells are potent targets for gene therapy of epidermolysis bullosa. **9th Annual Meeting of American Society of Gene Therapy. (2006)**
3. **Otsuru S**, Tamai K, Yamazaki T, Yoshikawa H and Kaneda Y. The mechanism of in vivo bone formation by bone marrow derived osteoblast progenitor cells. **8th Research conference of Naniwa Bone metabolism and Bone Tumor. (2006)**
4. **Otsuru S**, Tamai K, Yamazaki T, Yoshikawa H and Kaneda Y. The mechanism of recruitment of bone marrow derived osteoblast progenitor cells in bone formation. **9th Bone Research Joint Meeting. (2006)**
5. **Otsuru S**, Tamai K, Yamazaki T, Yoshikawa H and Kaneda Y. Bone marrow-derived osteoblast progenitor cells in circulating blood contribute to bone regeneration in vivo. **9th Annual Meeting of the Japanese Society for Tissue Engineering. (2006)**
6. **Otsuru S**, Tamai K, Yamazaki T, Yoshikawa H and Kaneda Y. Bone marrow-derived osteoblast progenitor cells in circulating blood contribute to bone regeneration in vivo. **22nd Annual Research Meeting of the Japanese Orthopaedic Association. (2007)**
7. Endo M, **Otsuru S**, Zoltick P, Hofmann T, Radu A, Horwitz E and Flake A. Gene transfer to the skeletal system by early gestational intra-cardiac injection of lentiviral vector driven by the Col1A1 promoter. **12th Annual Meeting of American Society of Gene Therapy. (2009)**
8. Jiang Q, Oldenburg R, **Otsuru S**, Grand-Pierre A, Horwitz E and Uitto J. Parabiotic heterogenetic pairing of *Abcc6*^{-/-} and wild-type mice halts progression of ectopic mineralization in a murine model of pseudoxanthoma elasticum. **Annual Meeting of Society of Investigative Dermatology. (2009)**
9. **Otsuru S**, Shimono K, Hofmann T, Iwamoto M and Horwitz E. Transplantation of mesenchymal stromal cells (MSCs) induces linear bone growth by stimulating growth plate chondrocyte proliferation. **16th Annual Meeting of the International Society for Cellular Therapy. (2010)**
10. Olson TS, Caselli A, **Otsuru S**, Hofmann TJ and Horwitz EM. Novel role for host-derived megakaryocytes in facilitating stem cell engraftment through enhancement of osteoblastic niche restoration following radioablation. **52nd American Society of Hematology Annual Meeting. (2010)**
11. Caselli A, Olson TS, **Otsuru S**, Hofmann TJ, Paolucci P, Dominici M and Horwitz EM. IGF-1 mediated osteoblastic niche expansion after marrow ablation enhances long-term hematopoietic stem cell engraftment and hematopoietic reconstitution after bone marrow transplantation. **52nd American Society of Hematology Annual Meeting. (2010)**
12. Olson TS, Caselli A, **Otsuru S**, Hofmann TJ and Horwitz EM. Host-derived megakaryocytes enable efficient hematopoietic stem cell engraftment following radioablation through facilitation of osteoblastic stem cell niche expansion. **American Society of Pediatric Hematology/Oncology's 24th Annual Meeting. (2011)**
13. Olson TS, **Otsuru S**, Hofmann TJ and Horwitz EM. Enhancement of megakaryocyte interactions with the osteoblastic hematopoietic stem cell niche improves engraftment efficiency following hematopoietic stem cell transplantation. **54th American Society of Hematology Annual Meeting. (2012)**
14. **Otsuru S**. Identification of the mechanism underlying bone growth after mesenchymal stromal cell (MSC) infusion. **Center for Regenerative Medicine and Cell Based Therapies 3rd Annual Retreat. (2014)**
15. Usami Y, Gunawardena, A, Francois N, Takano H, **Otsuru S**, Iwamoto M, Yang W, Toyosawa S, Enomoto-Iwamoto M. A novel cell population contributing to appositional growth of growth plate

in postnatal mice. **Annual Meeting of the American Society for Bone and Mineral Research. (2017)**

16. **Otsuru S.** 4-phenylbutyrate (4PBA) ameliorates growth deficiency in G610C mouse model of osteogenesis imperfecta. **Annual Meeting of the American Society for Bone and Mineral Research. (2019)**

Poster Presentations

1. **Otsuru S,** Tamai K, Yamazaki T, Yoshikawa H and Kaneda Y. BMP-2 mobilizes robust bone marrow mesenchymal progenitor cells to the circulating blood in bone regeneration. **28th Annual Meeting of the Molecular Biology Society of Japan. (2005)**
2. **Otsuru S,** Tamai K, Yamazaki T, Chino T, Yoshikawa H and Kaneda Y. Induction of immune tolerance to transgene products by mixed chimerism with low dose irradiation. **9th Annual Meeting of American Society of Gene Therapy. (2006)**
3. Chen X, Hofmann T, **Otsuru S,** Jethva R and Horwitz E. A strategy for distinguishing SNP identify in multiple-donors involved in haploidentical bone marrow transplantation. **Annual Meeting of American Society for Blood and Marrow Transplantation. (2009)**
4. Chi H, Shimono K, Tung W, Jasinski J, Macollino C, **Otsuru S,** Pacifici M and Iwamoto M. Mechanisms of inhibition of heterotopic ossification by a RAR γ Agonist. **Annual Meeting of the American Society for Bone and Mineral Research. (2010)**
5. **Otsuru S,** Shimono K, Hofmann TJ, Iwamoto M and Horwitz EM. Transplantation of mesenchymal stromal cells (MSCs) induces linear bone growth by stimulating growth plate chondrocyte proliferation. **20th Annual CHOP Research Poster Day. (2010)**
6. **Otsuru S,** Chen X, Hofmann TJ, Olson TS and Horwitz EM. Identification of endosteal hematopoietic stem cell niche. **21st Annual CHOP Research Poster Day. (2011)**
7. **Otsuru S,** Hofmann TJ and Horwitz EM. New method to isolate mesenchymal stromal cells from bone marrow. **18th Annual Meeting of the International Society of Cellular Therapy. (2012)**
8. **Otsuru S,** Hofmann TJ, Olson TS, Iwamoto M and Horwitz EM. MSC therapy for bone disorders. **9th Annual Scientific Symposium of Penn Center for Musculoskeletal Disorders. (2012)**
9. **Otsuru S,** Chen X, Hofmann TJ, Olson TS and Horwitz EM. Identification of novel bone lining cell. **9th Annual Scientific Symposium of Penn Center for Musculoskeletal Disorders. (2012)**
10. **Otsuru S,** Hofmann TJ, Olson TS and Horwitz EM. Equivalent MSC preparation using two isolation methods. **20th Annual Meeting of the International Society of Cellular Therapy. (2014)**
11. **Otsuru S,** Hofmann TJ and Horwitz EM. MicroRNA in microvesicles released from MSCs mediates trophic effect. **20th Annual Meeting of the International Society of Cellular Therapy. (2014)**
12. Olson TS, **Otsuru S,** Hofmann TJ, Dominici M and Horwitz EM. Expansion of the endosteal hematopoietic stem cell niche following myeloablative and reduced intensity conditioning is triggered by hematopoietic cell loss. **56th American Society of Hematology Annual Meeting. (2014)**
13. Overholt K, **Otsuru S,** Guess AJ, Best V, Olson TS, Dominici M and Horwitz EM. Adaptation of marrow osteoblast morphology mediated by a hematopoietic-derived endosteal cell is critical for donor HSC engraftment after BMT. **57th American Society of Hematology Annual Meeting. (2015)**
14. **Otsuru S,** Noguchi T, Guess AJ, Overholt KM, Ebina K, Horwitz EM. Apolipoprotein E; Potential Novel Therapy for Osteogenesis imperfecta. **NCH Research Retreat 2016. (2016)**
15. **Otsuru S,** Guess AJ, Horwitz EM. Identification of the mechanism underlying growth deficiency in osteogenesis imperfecta. **Gordon Research Conference, Cartilage Biology & Pathology. (2017)**

16. Guess AJ, Yu M, Relation T, Dominici M, **Otsuru S**, Horwitz EM. MSC phagocytosis of activated T cells is critical for immune suppression. **23rd Annual Meeting of the International Society of Cellular Therapy. (2017)**
17. Hasgur S, Desbourdes LM, Guess AJ, **Otsuru S**, Yu M, Overholt KM, Relation T, Horwitz EM. Macrophages attenuate survival of intravenously administered human mesenchymal stromal cells by phagocytosis. **Immunology 2017. (2017)**
18. **Otsuru S**, Guess AJ, Cheah K, Iwamoto M, Horwitz EM. Identification of the mechanism underlying growth deficiency in osteogenesis imperfecta. **Annual Meeting of the American Society for Bone and Mineral Research. (2017)**
19. Miyachi H, Tara S, **Otsuru S**, Miyamoto S, Yi T, Drews J, Nakayama H, Shoji T, Sugiura T, Breuer CK, Shinoka T. Platelet depletion reduces bioresorbable vascular graft calcification in a mouse aortic model. **Annual Meeting of the American Heart Association. (2017)**
20. Kim DG, **Otsuru S**, Han CM, Beck FM, Cho H, Lee K, Horwitz EM. Multiscale characterization of bone in osteogenesis imperfecta. **Annual Meeting of the Orthopaedic Research Society. (2018)**
21. Kwon J, Kim DG, **Otsuru S**, Cho H. Characterization of piezoelectricity of collagen in osteogenesis imperfecta via piezoresponse force microscopy. **Annual Meeting of the Orthopaedic Research Society. (2018)**
22. Enomoto-Iwamoto M, Izumi S, **Otsuru S**, Akabudike N. Control of glucose metabolism is important in tenogenic differentiation of progenitors derived human injured tendons. **ORS Tendon Section 2018 Conference. (2018)**
23. Matsuoka M, Tian H, Wilson K, **Otsuru S**, Iwasaki N, Abzug JM, Enomoto-Iwamoto M, Iwamoto M. Establishment of proximal tibial growth plate injury mouse model. **Annual Meeting of the Orthopaedic Research Society. (2019)**
24. Izumi S, **Otsuru S**, Adachi N, Itzhak N, Akabudike N, Enomoto-Iwamoto M. Control of glucose metabolism is important in tenogenic differentiation of tendon progenitors derived from human injured tendons. **Annual Meeting of the Orthopaedic Research Society. (2019)**
25. Scheiber AL, Suzuki A, Enomoto-Iwamoto M, Iwamoto M, Leikin S, **Otsuru S**. 4PBA ameliorates growth deficiency in G610C mouse model of osteogenesis imperfecta. **Gordon Research Conference, Cartilage Biology & Pathology. (2019)**
26. Wilson K, Usami Y, Hogarth D, Scheiber A, Tian H, Wei Y, Qin L, **Otsuru S**, Toyosawa S, Iwamoto M, Abzug JM, Enomoto-Iwamoto M. Analysis of linear regression between morphometric parameters of growth plate and long bone growth in mice and human. **Annual Meeting of the American Society for Bone and Mineral Research. (2019)**
27. Iyer SR, Scheiber AL, Yarowsky P, Henn RF, **Otsuru S**, Lovering RM. Exosomes isolated from platelet-rich plasma and mesenchymal stem cells promote functional recovery after muscle injury. **Annual Meeting of American College of Sports Medicine. (2020)**

Research Support

Ongoing Research Support:

9/1/2020-8/31/2025 NIH/NIAMS; R01AR075733-01A1 (Otsuru: PI):
 Title: Mechanism of growth deficiency in dominant forms of osteogenesis imperfecta.
 This grant is to determine whether ER stress in hypertrophic chondrocytes in the growth plate primarily causes growth deficiency in osteogenesis imperfecta.

- 9/11/2020-8/31/2022 NIH/NIAMS; R21AR077654-01 (Otsuru: PI)
 Title: Development of a novel therapy with Apolipoprotein E for osteogenesis imperfecta.
 This grant is to determine if Apolipoprotein E can be a therapeutic molecule that stimulates longitudinal bone growth in osteogenesis imperfecta
- 6/30/2018-10/31/2020 MSCRF (Maryland Stem Cell Research Fund) Discovery Program (Otsuru: PI)
 Title: Developing MSC-Derived Extracellular Vesicle Therapy for Osteogenesis Imperfecta.
 This grant is to establish the effective regimen of extracellular vesicle-based therapy for osteogenesis imperfecta toward clinical application.
- 7/1/2019-12/1/2020 University of Maryland, Baltimore Institute for Clinical & Translational Research (ICTR), Accelerated Translational Incubator Pilot (ATIP) Grant (Otsuru: PI)
 Title: Application of long acting retinoid nano-particles for orthopaedic infection.
 This grant is to develop a novel therapy for osteomyelitis using retinoid nano-particles.
- 12/23/2019-12/22/2020 University of Maryland, Baltimore (UMB) Institute for Clinical & Translational Research (ICTR) Voucher Program (Otsuru: PI)
 Title: Precise characterization of the growth plate in osteogenesis imperfecta
 This grant is to establish CLEM technique on bone sections and characterize the growth plate of osteogenesis imperfecta.

Educational Activities

Teaching

1. Oral Biology Graduate Student Seminar Series (DENT 7920) at The Ohio State University, College of Dentistry. 2016, Lecture Title: "MSC Therapy and beyond".
2. Cell and Systems Physiology (GPLS645) at The University of Maryland, School of Medicine. 2019, Lecture Title: "Experimental Investigation of MSCs".
3. Cell and Systems Physiology (GPLS645) at The University of Maryland, School of Medicine. 2020, Lecture Title: "Experimental Investigation of MSCs".

Committee

1. Serve as a thesis committee member for a Ph.D candidate in Molecular Medicine Program at UMB.
2. Serve as a committee member of EM Facility Steering Committee from June 2020.

Reviewer

1. Serve as a reviewer in the Mock Study Section for F32 application at The University of Maryland School of Medicine. 2018.
2. Serve as a reviewer in the study section for the 2020 ATIP Grant Program at The University of Maryland, Baltimore Institute for Clinical and Translational Research (ICTR). 2020.

Journal Peer Review Activities

Bone
Biology of Blood and Marrow Transplantation
Calcified Tissue International
Cell Transplantation
Cytotherapy
Journal of Cellular Physiology
Journal of Dental Research
Journal of International Medical Research
Laboratory Investigation
Molecular Therapy
Tissue Engineering
Stem Cells International