

**The 44th Annual Meeting of the Japanese Society  
for Bone and Mineral Research**

**July 2-4, 2026**

President: **Daisuke Inoue**  
(Third Department of Medicine,  
Teikyo University Chiba Medical Center, Japan)



Highlights of the Meeting 8:10-8:50

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**JCS1-1 Clinical Research**

○ Sumito Ogawa

Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo

**JCS1-2 Basic Research**

○ Yuki Imai

Division of Integrative Pathophysiology, Proteo-Science Center, Department of Pathophysiology, Graduate School of Medicine, Ehime University

**Symposium 1** 8:55-10:25

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Chairs : Hiroshi Takayanagi (Department of Immunology, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo)

Kazuo Okamoto (Division of Immune Environment Dynamics, Cancer Research Institute, Kanazawa University)

**New Frontiers in Osteonetwork Research**

**SY1-1 Regulation of Bone Metabolism by Estrogen, Nutrition, and Exercise**

○ Aoi Ikedo<sup>1) 2)</sup>

1) Biochemistry, Department of oral health science, Faculty of Dental Medicine, Hokkaido University, 2) Division of Integrative Pathophysiology, Proteo-Science Center, PIAS, Ehime University

**SY1-2 Intestinal B cell migration to the bone marrow under low-energy conditions**

○ Koji Hase<sup>1) 2)</sup>

1) The Institute of Medical Science, The University of Tokyo (IMSUT), 2) Faculty of Pharmacy, Keio University

**SY1-3 Regulation of hematopoietic stem/progenitor cell homing to bone marrow by vasoactive mediators**

○ Keiyo Takubo<sup>1) 2)</sup>

1) Department of Cell Fate Biology and Stem Cell Medicine, Tohoku University Graduate School of Medicine, 2) Department of Stem Cell Biology, National Institute of Global Health and Medicine, Japan Institute for Health Security, Tokyo, Japan

**SY1-4 Bone-encoded immune longevity: Plasma cells sense osteogenic ATP through P2RX4**

○ Masaki Ishikawa<sup>1) 2)</sup>

1) Laboratory of Molecular Immunology, Immunology Center, National Heart, Lung and Blood Institute, National Institutes of Health, Bethesda, MD, USA, 2) Department of Rehabilitation for Orofacial Disorders Division of Growth and Development Dentistry Osaka University Graduate School of Dentistry Anicom Big Data and MA-T Clinical Science Collaborative Course, The University of Osaka

## Special Lecture 1 10:35-11:35

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Chair : Daisuke Inoue (Third Department of Medicine, Teikyo University Chiba Medical Center)

### SL1-1 Statistical genetics elucidates disease biology and personalized medicine

○ Yukinori Okada<sup>1)2)</sup>

1) Department of Genome Informatics, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan,

2) Laboratory for Systems Genetics, RIKEN Center for Integrative Medical Sciences, Yokohama, Japan

## Luncheon Seminar 1 11:50-12:50

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Chair : Daisuke Inoue (Third Department of Medicine, Teikyo University Chiba Medical Center, Japan)

### LS1 Future Directions in Osteoporosis Therapy: Integrating Osteoanabolic Agents and Senescence-Targeted Strategies

○ Joshua Nicholas Farr

University of Arizona College of Medicine

Co-sponsored by : AMGEN K.K. / Astellas Pharma Inc.

## Symposium 2 13:05-14:35

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Chairs : Daisuke Inoue (Third Department of Medicine, Teikyo University Chiba Medical Center)

Takuo Kubota (Department of Pediatric Nephrology and Metabolism, Osaka Women's and Children's Hospital, Osaka Prefectural Hospital Organization)

### Clinical Program Committee: Guidelines for the Management of Rare Bone Diseases

#### SY2-1 Clinical practice guidelines for X-linked hypophosphatemia

○ Takuo Kubota

Department of Pediatric Nephrology and Metabolism, Osaka Women's and Children's Hospital, Osaka Prefectural Hospital Organization

#### SY2-2 Management of Hypophosphatasia base on the Clinical Practice Guidelines

○ Toshimi Michigami

Department of Bone and Mineral Research, Research Institute, Osaka Women's and Children's Hospital

#### SY2-3 Guideline-based management of patients with rare diseases -Hypoparathyroidism-

○ Seiji Fukumoto<sup>1)</sup>, Rieko Takatani<sup>2)</sup>, Daisuke Inoue<sup>3)</sup>

1) Tamaki-Aozora Hospital, 2) Graduate School of Education, Chiba University, 3) Third Department of Medicine, Teikyo University Chiba Medical Center

## CKD-MBD Guideline Session 14:45-16:15

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Chairs : Yasuo Imanishi (Department of Vascular Medicine, Osaka Metropolitan University Graduate School of Medicine)  
Hirotaka Komaba (Division of Nephrology, Endocrinology and Metabolism, Tokai University School of Medicine)

### The New CKD-MBD Guideline: Key Updates and Application in Daily Clinical Practice

#### JCS2-1 Background and Philosophy of the Guideline Revision

○ Takayuki Hamano

Department of Nephrology, Nagoya City University Postgraduate School of Medical Sciences

#### JCS2-2 Updates to the CKD-MBD Guidelines and Calcium-Phosphate Management

○ Shunsuke Yamada

Division of Kidney Care Unit, Kyushu University, Fukuoka, Japan

#### JCS2-3 Management of PTH in the updated CKD-MBD guidelines

○ Shunsuke Goto

Division of Nephrology, Kobe University Graduate School of Medicine, Kobe, Japan

#### JCS2-4 The Unique Aspects of Bone Metabolism Assessment and Management in CKD-MBD Guideline

○ Junichiro James Kazama

Department of Nephrology and Hypertension, Fukushima Medical University

## JSBMR Young Investigator Award Session 16:25-17:45

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Chairs : Hiroshi Asahara (Department of Systems BioMedicine, Institute of Science Tokyo)  
Toshimi Michigami (Department of Bone and Mineral Research, Research Institute, Osaka Women's and Children's Hospital)

#### JCA-1 Identification of a Novel Vascular Calcification Associated Macrophage Subset Regulated by Stepwise Crystal Transformation

○ Kazuma Sato<sup>1</sup>, Yasuhito Yahara<sup>2</sup>, Masaru Ishii<sup>1</sup>

1) Graduate School of Medicine, The University of Osaka, Immunology and Cell Biology, 2) Department of orthopaedic surgery, University of Toyama

#### JCA-2 Elucidating sex chromosome dependent mechanisms of bone length regulation by Utx and Uty

○ Yuta Yanagihara<sup>1</sup>, Wataru Kitamura<sup>2</sup>, Yuuki Imai<sup>1,2</sup>

1) Division of Integrative Pathophysiology, Proteo-Science Center, Ehime University, 2) Department of Pathophysiology, Ehime University Graduate School of Medicine

#### JCA-3 Endothelial RANK signaling drives bone aging via IL-1 beta

○ Rina Iwamoto<sup>1</sup>, Takumi Takahashi<sup>1</sup>, Zhifeng He<sup>1</sup>, Masayoshi Ishida<sup>1</sup>, Midori Nakamura<sup>2</sup>, Nobuyuki Udagawa<sup>1,2</sup>, Yasuhiro Kobayashi<sup>1</sup>

1) Institute for Oral Science, Matsumoto Dental University, Nagano, Japan, 2) Department of Biochemistry, Matsumoto Dental University, Nagano, Japan

#### JCA-4 TNF-alpha-driven proliferation of osteoclast precursors in situ causes aberrant bone destruction in arthritic joints

○ Tomoya Agemura<sup>1</sup>, Masaru Ishii<sup>1,2</sup>

1) Department of Immunology and Cell Biology, Immunology Frontier Research Center(IFReC), The University of Osaka, 2) Department of Immunology and Cell Biology, Graduate School of Medicine and Frontier Biosciences, The University of Osaka

**JCA-5 Role of bone marrow stromal cell-derived Wnt in PTH-induced osteogenesis**

○ Takumi Takahashi<sup>1)</sup>, Rina Iwamoto<sup>1)</sup>, Zhifeng He<sup>1)</sup>, Masayoshi Ishida<sup>1)</sup>, Toshihide Mizoguchi<sup>2)</sup>, Nobuyuki Udagawa<sup>1)3)</sup>, Yasuhiro Kobayashi<sup>1)</sup>

1) Institute for Oral Science, Matsumoto Dental University, 2) Oral Health Science Center, Tokyo Dental College, 3) Department of Biochemistry, Matsumoto Dental University

**JCA-6 Prevalence of Undiagnosed Adult Osteogenesis Imperfecta and Genotype-Specific Valvular Heart Disease**

○ Soichiro Kimura<sup>1)2)</sup>, Hajime Kato<sup>1)2)</sup>, Yoshitomo Hoshino<sup>1)2)</sup>, Koki Irie<sup>1)2)</sup>, Natsuho Adachi<sup>2)3)</sup>, Naoko Hidaka<sup>1)2)</sup>, Taku Saito<sup>2)4)</sup>, Yasuhisa Ohata<sup>5)</sup>, Nobuaki Ito<sup>2)6)</sup>

1) Division of Nephrology and Endocrinology, The University of Tokyo Hospital, 2) Osteoporosis Center, The University of Tokyo Hospital, 3) Department of Pediatrics, The University of Tokyo Hospital, Tokyo, 4) Department of Orthopaedic Surgery, The University of Tokyo Hospital, 5) Department of Pediatrics, The University of Osaka Graduate School of Medicine, 6) Division of Therapeutic Development for Intractable Bone Diseases, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo

**JCA-7 Renal Safety of Romosozumab in Osteoporosis Patients with Chronic Kidney Disease: A Retrospective Analysis of 296 Cases Across All CKD Stages**

○ Ryo Nakano<sup>1)</sup>, Ayumi Ichisawa<sup>2)</sup>, Kenya Saruta<sup>3)</sup>, Masakazu Kogawa<sup>2)</sup>, Akira Fukuda<sup>2)</sup>

1) Towada City Hospital, Department Orthopedic Surgery, 2) Shimokita Medical Center, Mutsu General Hospital, Department Orthopedic Surgery, 3) Aomori Prefectural Central Hospital, Department Orthopedic Surgery

**JCA-8 Prolonged postoperative half-life of intact FGF23 under the influence of burosumab treatment**

○ Koki Irie<sup>1)2)</sup>, Koichiro Furukawa<sup>1)</sup>, Natsuho Adachi<sup>2)3)</sup>, Soichiro Kimura<sup>1)2)</sup>, Yoshitomo Hoshino<sup>1)2)</sup>, Naoko Hidaka<sup>1)2)</sup>, Nobuaki Ito<sup>2)4)</sup>

1) Division of Nephrology and Endocrinology, The University of Tokyo Hospital, 2) Osteoporosis Center, The University of Tokyo Hospital, 3) Department of Pediatrics, The University of Tokyo Hospital, 4) Division of Therapeutic Development for Intractable Bone Diseases, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo

**Symposium 3** 8:55-10:25

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Chairs : Kazuhiro Aoki (Department of Basic Oral Health Engineering, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo)

Aya Takakura (Medical Affairs Dept., ASAHI KASEI THERAPEUTICS CORPORATION)

**Joint Symposium with the Japanese Society for Bone Morphometry - Bone Histomorphometry to Advance Bone Research -**

**SY3-1** Spatiotemporal Analysis of Bone and Cell Dynamics: A Bone Organoid Reproducing Bone Remodeling

- Atsuhiko Hikita  
The University of Tokyo Hospital

**SY3-2** A conceptual guide to bone histomorphometric parameters

- Shinya Tanaka  
Dept. of Orthopaedics and Cent. for Joint Replacement, Touto Kasukabe Hosp.

**SY3-3** Workshop: Technique of bone histomorphometry

- Aya Takakura<sup>1)3)</sup>, ○ Taketoshi Shimakura<sup>2)3)</sup>, ○ Ryoko Takao-Kawabata<sup>1)3)</sup>  
1) ASAHI KASEI THERAPEUTICS CORPORATION, 2) Niigata Bone Science Institute, 3) Forum of Bone Histomorphometry

**Educational Lecture 1** 10:35-11:35

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Chair : Reiko Inoue (Third Department of Medicine, Teikyo University Chiba Medical Center)

**EL1-1** The Importance of Vitamin D from Fetal Life to Adolescence and Young Adulthood

- Yuko Sakamoto  
Dept of Orthop Juntendo Univ Nerima Hosp

**Luncheon Seminar 2** 11:50-12:50

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Chair : Yoshiya Tanaka (Department of Molecular Targeted Therapeutics, The Department of Internal Medicine, School of Medicine, University of Occupational and Environmental Health, Japan)

**LS2** Osteoporosis Treatment Based on Guidelines

- Sakae Tanaka  
Department of Orthopaedic Surgery, The University of Tokyo, Tokyo, Japan

Co-sponsored by : Daiichi Sankyo Co.,Ltd.

## Symposium 4 13:05-14:35

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Chairs : Masayuki Tsukasaki (Department of Biochemistry, School of Dentistry, Showa Medical University)  
Toshihide Mizoguchi (Oral Health Science Center, Tokyo Dental College)

### Bone Metabolism from the Perspective of Dentistry: Development, Regeneration, and Disease

**SY4-1** Resolving a longstanding mystery in embryonic facial prominence patterning-Molecular Mechanisms of Frontonasal Process Formation Governed by Retinoic Acid Signaling-

○ Hiroshi Kurosaka

The University of Osaka Graduate School of Dentistry, Department of Orthodontics and Dentofacial Orthopedics

**SY4-2** In Vivo Mesenchymal Stem Cell Dynamics in Periodontal Tissue Formation and Bone Regeneration

○ Mizuki Nagata

Department of Periodontology, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo

**SY4-3** Generation of human iPS cell-derived jawbone organoids: From developmental recapitulation to applications in regenerative medicine and disease modeling

○ Souta Motoike<sup>1)</sup>, Yoshiko Inada<sup>1)</sup>, Junya Toguchida<sup>2)</sup>, Mikihiro Kajiya<sup>3)</sup>, Makoto Ikeya<sup>1)</sup>

1) Department of Clinical Application, Center for iPS Cell Research and Application, Kyoto University, Kyoto, Japan,

2) Department of Fundamental Cell Technology, Center for iPS Cell Research and Application, Kyoto University,

Kyoto, Japan, 3) Department of Innovation and Precision Dentistry, Hiroshima University Hospital, Hiroshima, Japan

**SY4-4** Fate Determination of Skeletal Stem Cells: Elucidating the Regulatory Mechanisms of Intramembranous and Endochondral Ossification Using the Calvaria as a Model

○ Takamitsu Maruyama

The ADA Forsyth Institute

## Educational Lecture 2 14:45-15:45

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Chair : Yasuhisa Oohata (Department of Pediatrics, The University of Osaka Graduate School of Medicine)

**EL2-1** Diagnosis and Management of Osteogenesis Imperfecta in an Osteoporosis Clinic

○ Nobuaki Ito<sup>1)2)</sup>

1) Division of Therapeutic Development for Intractable Bone Diseases, The University of Tokyo, 2) Osteoporosis Center, The University of Tokyo Hospital

## Educational Lecture 3 16:25-17:25

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Chair : Itsuro Endo (Department of Bioregulatory Sciences, Tokushima University Graduate School of Biomedical Sciences)

**EL3-1** Endocrine system in bone metabolism

○ Yasuhiro Takeuchi

Toranomon Hospital Kajigaya

Symposium 5 8:55-10:25

Chairs : Masayuki Tsukasaki (Department of Biochemistry, School of Dentistry, Showa Medical University)  
Nobuaki Ito (Division of Therapeutic Development for Intractable Bone Diseases, The University of Tokyo)

Rising Star

**SY5-1** Elucidation of meniscus- and cartilage-specific regulatory mechanisms underlying disease risk in osteoarthritis

○ Yutaro Uchida<sup>1)2)</sup>, Hiroshi Asahara<sup>1)2)</sup>

1) Institute of Science Tokyo, Department of Systems Biomedicine, 2) The Scripps Research Institute

**SY5-2** Csf1r<sup>-</sup> Macrophages Govern the Second Wave of Neutrophils for Bone Repair

○ Zhifeng He, Yasuhiro Kobayashi

Department of Hard Tissue Research, Institute for Oral Science, Matsumoto Dental University

**SY5-3** Elucidation of Osteoporosis Pathophysiology through Bone Microarchitecture Analysis: Insights from HR-pQCT

○ Ko Chiba, Makoto Osaki

Department of Orthopedic Surgery, Nagasaki University Hospital

**SY5-4** Clinical Analysis of the Efficacy of Anabolic Agents for Osteoporosis

○ Ayako Tominaga<sup>1)</sup>, Keiji Wada<sup>2)</sup>, Ken Okazaki<sup>1)</sup>

1) Dept. of Orthop. Surg., Tokyo Women's Medical University, Tokyo, Japan, 2) Spine Center, Tomei Atsugi Hospital

Oral Presentation 1 10:35-11:25

Chairs : Yuko Nakamichi (Institute for Oral Science, Matsumoto Dental University)  
Tadahiro Iimura (Hokkaido University)

Osteoclasts

**O1-1** Medullary cavity expansion is mediated by distinct cell populations during fetal bone development

○ Eriko Sumiya<sup>1)3)</sup>, Natsuko Nakaima<sup>2)</sup>, Yuki Matsushita<sup>2)</sup>, Shinichiro Sawa<sup>1)</sup>

1) Division of Mucosal Immunology, Medical Institute of Bioregulation, Kyushu University, Fukuoka, Japan,

2) Department of Skeletal Development and Regenerative Biology, Nagasaki University Graduate School of

Biomedical Sciences, Nagasaki, Japan, 3) Department of Molecular Therapy, National Institute of Neuroscience,

National Center of Neurology and Psychiatry, Tokyo, Japan

**O1-2** Identification and functional analysis of Rankl-Opg-dependent actinoclasts in medaka

○ Masahiro Chatani<sup>1)2)</sup>, Masamichi Takami<sup>1)2)</sup>

1) Department of Pharmacology, Graduate School of Dentistry, Showa Medical University, Tokyo, Japan,

2) Pharmacological Research Center, Showa Medical University

**O1-3** Regulatory mechanism of Nfatc1 by the phosphatase Ctdnep1 and analysis of osteoclast differentiation in myeloid-specific Ctdnep1-deficient mice

○ Waraku Shibata, Takuto Konno, Chisato Sampei, Tadayoshi Hayata

Department of Molecular Pharmacology, Graduate School of Pharmaceutical Sciences, Tokyo University of Science, Tokyo, Japan

**O1-4** The ER-resident peptidyl-prolyl isomerase Fkbp11 plays an essential role in osteoclast differentiation

○ Koki Nakamura, Takuto Konno, Chisato Sampei, Hayata Tadayoshi  
Molecular pharmacology, Graduate School of Pharmaceutical Sciences, Tokyo University of Science

**O1-5** Blue light suppresses osteoclast differentiation and bone resorption in a wavelength-specific manner: ROS-dependent inhibition of NFATc1 signaling

○ Keisuke Nishidono, Toshihiko Nishisho, Hiroaki Manabe  
Department of Orthopaedic Surgery, Tokushima University Graduate School of Biomedical Sciences, Tokushima, Japan

**Symposium 6** 13:05-14:35

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Chairs : Haruhiko Akiyama (Department of Orthopaedic Surgery, Gifu University Graduate School of Medicine)

Chisa Shukunami (Department of Molecular Biology and Biochemistry, Graduate School of Biomedical and Health Sciences, Hiroshima University)

**New Advances in Musculoskeletal Stem Cells in Development and Regeneration**

**SY6-1** Coordination of diverse cell populations in calvarial formation

○ Yuki Yoshimoto<sup>1)</sup>, Xueying Gao<sup>1)</sup>, Chengxue Jin<sup>1)4)</sup>, Hanyang Wang<sup>1)</sup>, Julia Osaki<sup>1)</sup>, Kenichi Nakahama<sup>2)</sup>, Jun Takeuchi<sup>1)3)</sup>, Sachiko Iseki<sup>1)</sup>

1) Department of Molecular Craniofacial Embryology, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo, Tokyo, Japan, 2) Department of Cellular Physiological Chemistry, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo, Tokyo, Japan, 3) Department of Molecular Biology, Faculty of Medicine, Hokkaido University, Sapporo, Japan, 4) Division of Developmental Biology, Cincinnati Children's Hospital Medical Center, Cincinnati, USA

**SY6-2** Bidirectional interaction between Scx-lineage and Skeletal muscle during their connection and junction formation

○ Masafumi Inui  
Laboratory of Animal Regeneration Systemology, Department of Life Sciences, School of Agriculture, Meiji University

**SY6-3** Bioengineering of human limb skeletal development using iPS cells

○ Takeshi Takarada<sup>1)2)</sup>  
1) Institute for Emerging Medical Innovation Advanced Research Area, Faculty of Academic Research, Okayama University, 2) Department of Regenerative Science Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University

**SY6-4** Development of Clinical-Grade Human iPSC-Derived Cartilage for Articular Cartilage Regeneration

○ Akihiro Yamashita, Kengo Abe, Noriyuki Tsumaki  
Tissue Biochemistry, Graduate school of Medicine, Osaka University, Osaka, Japan

## Oral Presentation 2 14:45-15:45

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Chairs : Yukiko Kuroda (Laboratory of Cell and Tissue Biology, Keio University School of Medicine)

Akira Nifuji (Department of Pharmacology, Tsurumi University School of Dental Medicine)

### Osteoblasts and Osteocytes

#### **O2-1 Neural crest-specific SETBP1 mutation disrupts craniofacial skeletogenesis in a novel mouse model of Schinzel-Giedion syndrome**

○ Hiromi Yamazaki

Department of Cancer Pathology, Graduate School of Medicine, The University of Osaka

#### **O2-2 Nuclear deformation caused by mitochondria stress response in osteocytes induced age-related bone loss**

○ Kenji Watanabe<sup>1)</sup>, Hidetoshi Nojiri<sup>2)</sup>, Takahiko Shimizu<sup>3)</sup>

1) Intractable disease research center, Juntendo University, Tokyo, Japan, 2) Department of Medicine for Orthopaedics and Motor Organ, Juntendo University, Tokyo, Japan, 3) Department of Food and Reproductive Function, Juntendo University, Tokyo, Japan

#### **O2-3 Deciphering Osteocyte Senescence through Mechanobiology**

○ Tetsuya Yoshimoto<sup>1)</sup>, Yuta Ando<sup>2)</sup>, Masayuki Suzuki<sup>1)</sup>, Mai Yoshino<sup>1)</sup>, Shin Morimoto<sup>1)</sup>, Gakuto Yasuda<sup>1)</sup>, Shinya Hasegawa<sup>1)</sup>, Tomoaki Shintani<sup>3)</sup>, Mikihiro Kajiyama<sup>1)</sup>

1) Dept. of Innovation and Precision Dentistry, Hiroshima University Hospital, 2) School of Dentistry, Hiroshima University, 3) Center for Oral Clinical Examination, Hiroshima University Hospital

#### **O2-4 BMP9 drives robust osteogenic differentiation through glycolytic activation and lactate signaling**

○ Changhwan Seong, Joji Kusuyama

Graduate School of Medical and Dental Sciences, Institute of Science Tokyo, Japan

#### **O2-5 Pannexin 3-mediated ATP release from preosteoblasts promotes osteoblast differentiation through P2X4 receptor activation**

○ Hiroaki Kito

Department of Pharmacology, Graduate School of Medical Sciences, Nagoya City University, Nagoya, Japan

#### **O2-6 Collective chiral alignment of osteoblasts: sensing 3D surface geometry through curvature and torsion**

○ Katsuhiro Kawai<sup>1)</sup>, Yukiko Kuroda<sup>1)</sup>, Koki Yoshida<sup>2)</sup>, Hiroaki Onoe<sup>3)</sup>, Atsushi Momose<sup>4)</sup>, Koichi Matsuo<sup>1)5)</sup>

1) Laboratory of Cell and Tissue Biology, Keio University School of Medicine, Tokyo, Japan, 2) Department of Mechanical Engineering, College of Engineering, Shibaura Institute of Technology, Tokyo, Japan, 3) Faculty of Science and Technology, Keio University, Yokohama, Japan, 4) IMRAM, Tohoku University, Sendai, Japan, 5) CIEM, Kawasaki, Japan

IFMRS Joint Symposium 8:55-10:25

Chairs : Yuki Imai (Division of Integrative Pathophysiology, Proteo-Science Center, Department of Pathophysiology, Graduate School of Medicine, Ehime University)

Asuka Terashima (Bone and Cartilage Regenerative Medicine, The University of Tokyo Hospital)

**JSY1-1** Converging Mechanisms and Therapeutic Implications of the Bone-Brain Axis in Osteoporosis and Alzheimer's Disease

○ Jiwon Lee

Biochemistry, Department of Oral Health Science, Hokkaido University, Sapporo, Japan

**JSY1-2** Frontiers in intravital bone imaging

○ Junichi Kikuta

Division of Immunology, Department of Microbiology and Infectious Diseases, Graduate School of Medicine, Kobe University, Hyogo, Japan

**JSY1-3** Dynamic Remodeling and Extracellular Secretion of Mitochondria Drive Osteogenesis

○ Yun-Sil Lee<sup>1</sup>, Joonho Suh<sup>1</sup>, Na-Kyung Kim<sup>1,2</sup>, Wonn Shim<sup>1</sup>, Seung-Hoon Lee<sup>3</sup>, Hyo-Jeong Kim<sup>4</sup>, Eunyong Moon<sup>5</sup>, Hiromi Sesaki<sup>6</sup>, Jae Hyuck Jang<sup>4,7</sup>, Jung-Eun Kim<sup>3</sup>

1) Seoul National University School of Dentistry, 2) Ajou Univ Med, 3) KNU SOM, 4) SNU Dent EM Center, 5) KBSI Ochang, 6) Johns Hopkins Univ, 7) KBSI Daejeon

**JSY1-4** The diversity of type 2 diabetic bone fragility – from matrix to molecules

○ Eva Maria Wölfel

Department of Molecular Endocrinology (KMEB), Clinical Institute, University of Southern Denmark, Odense, Denmark

Oral Presentation 3 10:35-11:25

Chairs : Tomoka Takao (Department of Regenerative Science Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences)

Keizo Nishikawa (Doshisha University)

**Stem Cells and Tissue Regeneration ①**

**O3-1** Elucidation of the Dkk1-Mediated Mitochondrial Dysfunction and cGAS-STING-Dependent Positive Feedback Loop in Bone Marrow Aging

○ Masayoshi Ishida<sup>1</sup>, Rina Iwamoto<sup>1</sup>, Takumi Takahashi<sup>1</sup>, Nobuyuki Udagawa<sup>1,2</sup>, Yasuhiro Kobayashi<sup>1</sup>

1) Institute for Oral Science, Matsumoto Dental University, 2) Department of Biochemistry, Matsumoto Dental University

**O3-2** Tmem119 is involved in the PTH-induced facilitation of bone repair

○ Ayaka Aoyama<sup>1</sup>, Naoyuki Kawao<sup>1</sup>, Katsumi Okumoto<sup>2</sup>, Ryota Kishigami<sup>1</sup>, Yuuya Mizukami<sup>1</sup>, Hiroshi Kaji<sup>1</sup>

1) Department of Physiology and Regenerative Medicine, Kindai University Faculty of Medicine, 2) Life Science Research Institute, Kindai University

**O3-3 RANKL-Binding Peptide Induces Bone Formation in Hydroxyapatite/Collagen Scaffolds Without BMP-2 in a Mouse Calvarial Defect Model**

○ Huan Cao, Kazuhiro Aoki

Department of Basic Oral health Engineering, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo

**O3-4 Super-enhancer-mediated regulation of KLF6 gene expression during human adipogenic differentiation**

○ Kaoru Yamagata<sup>1)</sup>, Mai-Phuong Nguyen<sup>1)</sup>, Hidenori Sakai<sup>1)</sup>, Takafumi Aritomi<sup>1)</sup>, Shigeaki Kato<sup>2)</sup>, Yoshiya Tanaka<sup>1)3)</sup>, Shingo Nakayamada<sup>1)</sup>

1) The First Department of Internal Medicine, School of Medicine, University of Occupational and Environmental Health, Japan, 2) Graduate School of Life Science and Engineering, Iryo Sosei University, 3) Department of Molecular Targeted Therapeutics, School of Medicine, University of Occupational and Environmental Health, Japan

**O3-5 The role of low-intensity pulsed ultrasound (LIPUS) and BMP-2-induced cellular communication network factor 1 (CCN1) in early osteogenic differentiation of mesenchymal stem cells**

○ Hsu Myat Paing<sup>1)2)</sup>, Satoshi Kubota<sup>1)</sup>, Masaharu Takigawa<sup>3)</sup>, Takuo Kuboki<sup>2)</sup>, Takashi Nishida<sup>1)</sup>

1) Department of Biochemistry and Molecular Dentistry, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, 2) Department of Oral Rehabilitation and Regenerative Medicine, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, 3) ARCOCS, Okayama University Faculty of Medicine, Dentistry and Pharmaceutical Sciences, Okayama

**Luncheon Seminar 3 11:50-12:50**

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Chair : Yasuo Imanishi (Department of Vascular Medicine, Osaka Metropolitan University Graduate School of Medicine)

**LS3 PTH Replacement Therapy Opens New Horizons in the Treatment of Hypoparathyroidism**

○ Yasuhiro Takeuchi

Toranomon Hospital Kajigaya

Co-sponsored by : TEIJIN PHARMA LIMITED

**Next-Generation Leaders Session: 2024 Research Grant Reports 13:05-14:55**

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Chairs : Riko Nishimura (Graduate School of Dentistry, Department of Molecular & Cellular Biochemistry, The University of Osaka)  
Noriyuki Tsumaki (Department of Tissue Biochemistry, Graduate School of Medicine, The University of Osaka)

**JCSR-1 Functional characterization and lineage tracing of LepR-positive periodontal ligament cells**

○ Shinichirou Ito

Department of Pharmacology, Tokyo Dental College, Tokyo, Japan

**JCSR-2 Exploration of drug discovery seeds targeting osteal resident macrophages for osteoporosis and impaired bone healing**

○ Yukihiro Kohara

**JCSR-3** Cancer-Associated Osteoclast-Derived Extracellular Vesicles Induce Inflammatory Osteolysis and Promote Prostate Cancer Progression in Bone

○ Takaaki Tamura<sup>1)2)</sup>

1) Department of Urology, Graduate School of Medicine, Chiba University, Chiba, Japan, 2) Department of Molecular and Cellular Medicine, Institute of Medical Science, Tokyo Medical University

**JCSR-4** Clinical Evaluation of Bone Mineral Density via Hounsfield Units in the Pediatric Lumbar Spine: Comparative Analysis Between Adolescent Idiopathic Scoliosis and Marfan Syndrome

○ Kosei Nagata<sup>1)2)</sup>, Yuki Taniguchi<sup>2)</sup>, Sakae Tanaka<sup>2)</sup>

1) Department of Orthopedic Surgery, Saitama Medical University, Saitama Medical Center, 2) The University of Tokyo Hospital

**JCSR-5** Exploring the site-specific regulation of bone homeostasis

○ Kenichi Nagano

Dept. of Oral Pathology, Institute of Biomedical Sciences, Nagasaki University, Nagasaki, Japan

**JCSR-6** Site-Specific Responses of Osteoblastic Cells to Parathyroid Hormone

○ Tomoka Hasegawa

Ultrastructure of Hard Tissue, Faculty of Dental Medicine, Hokkaido University

**JCSR-7** Analysis of Extracellular Vesicles in Bone Tissue Reveals a Novel Mechanism of Estrogen Deficiency-Induced Osteoporosis

○ Yuya Mizukami, Naoyuki Kawao, Ryota Kishigami, Hiroshi Kaji

Department of Physiology and Regenerative Medicine, Kindai University Faculty of Medicine

**JCSR-8** Multicellular society of bone: homeostatic maintenance and disease pathogenesis

○ Kazuo Okamoto<sup>1)2)</sup>

1) Division of Immune Environment Dynamics, Cancer Research Institute, Kanazawa University, 2) Immune Network Research Unit, Institute for Frontier Science Initiative, Kanazawa University

**JCSR-9** Effects of the Sirt1 on Bone-Muscle Health and Age-Related Metabolic Changes

○ Sumito Ogawa, Seiji Hashimoto, Tatsuya Hosoi

Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo

**Oral Presentation 4** 15:05-16:05

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Chairs : Masaki Inada (Department of Biotechnology and Life Science, Tokyo University of Agriculture and Technology)

Jumpei Teramachi (Department of Oral Function & Anatomy, Okayama University Faculty of Medicine, Dentistry and Pharmaceutical Sciences)

**Cancer**

**O4-1** Distinct Functional Roles of Bone Microenvironmental Cells in the Biphasic Osteoblastic and Osteolytic Pathology of Prostate Cancer Bone Metastases

○ Kagenori Ito

Department of Urology, Jikei University School of Medicine, Japan

- O4-2 Mechanistic Insight into Osteoclast Differentiation Driven by Oral Squamous Cell Carcinoma Derived Angiogenin in Jaw Bone Destruction**  
○ Nana Yoshitani<sup>1)</sup>, Jumpei Teramachi<sup>2)</sup>  
1) Department of Oral and Maxillofacial Surgery, Okayama University Hospital, Okayama, Japan, 2) Department of Oral Functional Anatomy, Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, Okayama, Japan
- O4-3 Involvement of Interleukin-1 in prostate cancer-induced bone formation**  
○ Moe Sugasaki, Keisuke Ikeda, Urara Kasuga, Michiko Hirata, Masaki Inada  
Department of Biotechnology and Life Science, Tokyo University of Agriculture and Technology
- O4-4 CIP2A drives bone microenvironment-mediated survival signaling in myeloma cells**  
○ Ariunzaya Bat-Erdene<sup>1)2)</sup>, Sooha Matsuki<sup>3)</sup>, Motosumi Nakagawa<sup>3)</sup>, Masahiro Hiasa<sup>3)</sup>, Masahiro Abe<sup>4)</sup>, Jumpei Teramachi<sup>1)</sup>  
1) Department of Oral Function and Anatomy, Okayama University Faculty of Medicine, Dentistry, and Pharmaceutical Sciences, Okayama University, Okayama, Japan, 2) Department of Immunology, School of Biomedicine, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia, 3) Department of Orthodontics and Dentofacial Orthopedics, Tokushima University Graduate School of Biomedical Sciences, Tokushima, Japan, 4) Department of Hematology, Kawashima Hospital, Tokushima, Japan
- O4-5 Elucidation of the molecular mechanism of OPSIN3 in metastatic prostate cancer**  
○ Haruna Arai<sup>1)</sup>, Yuta Yanagihara<sup>2)</sup>, Yuuki Imai<sup>2)3)</sup>  
1) Department of Urology, Ehime University Graduate School of Medicine, 2) Division of Integrative Pathophysiology, Proteo-Science Center (PROS), PIAS, Ehime University Department of Pathophysiology, Ehime University Graduate School of Medicine, 3) Division of Integrative Pathophysiology, Ehime University
- O4-6 Bone-Related Events After Discontinuation of High-dose Denosumab Initiated by Other Departments**  
○ Jun Sugaya, Ayako Tominaga  
Tokyo Women's Medical University, Department of Orthopedic Surgery

**Symposium 7** 8:40-10:10

Chairs : Masaru Ishii (Department of Immunology and Cell Biology, Graduate School of Medicine, The University of Osaka)  
Hiroshi Asahara (Department of Systems BioMedicine, Institute of Science Tokyo)

**New Technologies and Analyses Accelerating Bone Metabolism Research for Drug Discovery**

**SY7-1** Molecular Mechanisms and Pathological Landscapes of Joint Diseases via Supersulfide Mass Spectrometry and Spatial Transcriptomics

○Fumiko Yano

Showa Medical University Research Administration Center, Showa Medical University, Tokyo, Japan

**SY7-2** Rational design of de novo proteins using large datasets and AI

○Kotaro Tsuboyama

UTokyo IIS

**SY7-3** Extracellular vesicle lipid metabolism drives inflammation and Th17-dependent bone destruction

○Yoshitaka Taketomi<sup>1)2)</sup>, Makoto Murakami<sup>1)3)</sup>

1) Graduate School of Medicine, The University of Tokyo, 2) AMED-PRIME, 3) AMED-CREST

**SY7-4** Multifaceted AI Approaches to the Structure and Dynamics of Protein Complexes

○Ryuichiro Ishitani

Medical Research Laboratory, Institute of Integrated Research, Institute of Science Tokyo

**Symposium 8** 10:20-11:50

Chairs : Yoshiya Tanaka (Department of Orthopaedic Surgery, Faculty of Medicine, The University of Tokyo)  
Sakae Tanaka (Department of Orthopaedic Surgery, The University of Tokyo)

**Joint Symposium with Japan College of Rheumatology: Unraveling the Mechanisms of Bone Damage in Rheumatoid Arthritis**

**SY8-1** Mechanisms of Bone Destruction in Rheumatoid Arthritis Revealed by Omics Analyses

○Keishi Fujio

Department of Allergy and Rheumatology, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan

**SY8-2** Distinct Mechanisms Underlying Joint Erosion and Osteoporosis in Rheumatoid Arthritis

○Noriko Komatsu

Medical Research Laboratory, Institute of Science Tokyo, Japan

**SY8-3** Can Molecular-Targeted Therapies for Rheumatoid Arthritis Prevent Osteoporosis? A Reassessment of Disease Control and Bone Metabolism

○Koshiro Sonomoto<sup>1)</sup>, Yoshiya Tanaka<sup>2)</sup>

1) Department of Clinical Nursing, School of Health Sciences, University of Occupational and Environmental Health, Japan, Kitakyushu, Japan, 2) Department of Molecular Targeted Therapeutics, University of Occupational and Environmental Health, Japan, Kitakyushu, Japan

## Luncheon Seminar 4 12:10-13:10

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Chair : Daisuke Inoue (Third Department of Medicine, Teikyo University Chiba Medical Center, Japan)

### LS4 Hypophosphatasia - Mind the Gap

○Lothar Seefried

Osteology and Clinical Trial Unit, König-Ludwig-Haus, University of Würzburg, Würzburg, Germany.

Co-sponsored by : Alexion Pharma GK

## JSBMR General Meeting Award Lectures 14:10-15:40

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Chairs : Seiji Fukumoto (Tamaki-Aozora Hospital)

Hiroshi Takayanagi (Department of Immunology, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo)

## Invited Lecture 1 15:50-16:50

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Chair : Sumito Ogawa (Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo)

### IL1-1 Targeting Cellular Senescence in Aging Bone: Mechanisms, Biomarkers, and Emerging Therapeutic Strategies for Osteoporosis

○Joshua Nicholas Farr

The University of Arizona, USA

**Symposium 9** 8:40-10:10

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Chairs : Kosuke Ebina (Department of Orthopedic Surgery, The University of Osaka Graduate School of Medicine, Osaka, Japan)  
Hiroshi Hagino (Sanin Rosai Hospital)

**Joint Symposium with the Osteoporosis Society: Emerging Trends in Osteoporosis Treatment Relevant to Basic Researchers, Including Updates to the Clinical Practice Guidelines**

**SY9-1** Introduction of Japanese 2025 guidelines for prevention and treatment of osteoporosis

- Sumito Ogawa  
Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo

**SY9-2** Current Trends in Osteoporosis Treatment: Essential Insights for Basic Scientists

- Sakae Tanaka  
Department of Orthopaedic Surgery, The University of Tokyo

**SY9-3** Recent Advances in Sequential Osteoporosis Therapy: Key Concepts for Basic Researchers

- Kosuke Ebina, Seiji Okada  
Department of Orthopedic Surgery, The University of Osaka Graduate School of Medicine, Osaka, Japan

**SY9-4** Secondary Osteoporosis

- Mika Yamauchi  
Division of Endocrinology and Metabolism, Research Institute for Metabolic Bone Disease, Eikokai One Hospital

**Symposium 10** 10:20-11:50

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Chairs : Junichi Kikuta (Division of Immunology, Department of Microbiology and Infectious Diseases, Graduate School of Medicine, Kobe University, Hyogo, Japan)  
Yasuhiro Kobayashi (Institute for Oral Science, Matsumoto Dental University)

**Regulation of Bone Metabolism by Blood Vessels**

**SY10-1** Visualizing bone and vascular dynamics by intravital imaging

- Junichi Kikuta  
Division of Immunology, Department of Microbiology and Infectious Diseases, Graduate School of Medicine, Kobe University, Hyogo, Japan

**SY10-2** Bone Vasculature and Mechanisms of Bone Regeneration: Periosteal Niches and Osteo-Angio Coupling

- Takahito Iga  
Department of Orthopedic Surgery, Keio University School of Medicine

**SY10-3** Endothelial RANK Signaling Drives Bone Aging

- Rina Iwamoto  
Institute for Oral Science, Matsumoto Dental University, Nagano, Japan

## **SY10-4 Hematopoietic Stem Cell Dynamics Regulated by Bone Marrow Blood Flow and Metabolism**

○ Takayuki Morikawa<sup>1,2)</sup>, Shinya Fujita<sup>1)</sup>, Keiyo Takubo<sup>1,2)</sup>

1) Department of Stem Cell Biology, National Institute of Global Health and Medicine, Japan Institute for Health Security, 2) Department of Cell Fate Biology and Stem Cell Medicine, Tohoku University Graduate School of Medicine

## **Luncheon Seminar 5 12:10-13:10**

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Chair : Takeshi Miyamoto (Department of Orthopedic Surgery, Kumamoto University School of Medicine)

### **LS5 Strong Muscles, Strong Bones: Protecting Locomotor Function to Prevent Falls and Fractures**

○ Manabu Tsukamoto

Department of Orthopaedic Surgery, University of Occupational and Environmental Health, Kitakyushu, Japan

Co-sponsored by : ASAHI KASEI THERAPEUTICS CORPORATION

## **Oral Presentation 5 15:50-16:50**

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Chairs : Shu Takeda (Seiseki Medical Clinic)

Kazunori Imaizumi (United Graduate School of Child Development, Osaka University)

### **Regulation of Bone Metabolism**

#### **O5-1 Homochiral Bilaterality in Skeletal Morphogenesis: from Osteoblasts to Cranial Architecture**

○ Koichi Matsuo<sup>1,2)</sup>, Shinju Usami<sup>1,3)</sup>, Kanta Kumaki<sup>1)</sup>, Shinobu Noji<sup>1)</sup>, Koki Yoshida<sup>4)</sup>, Hiroaki Onoe<sup>5)</sup>, Atsushi Momose<sup>6)</sup>, Yukiko Kuroda<sup>1)</sup>, Katsuhiko Kawaai<sup>1)</sup>

1) Laboratory of Cell and Tissue Biology, Keio University School of Medicine, Tokyo, Japan, 2) CIEM, Kanagawa, Japan, 3) Kawasaki Municipal Ida Hospital, Kanagawa, Japan, 4) College of Engineering, Shibaura Institute of Technology, Tokyo, Japan, 5) Faculty of Science and Technology, Keio University, Kanagawa, Japan, 6) Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Miyagi, Japan

#### **O5-2 NLP9 regulates osteoimmune homeostasis and protects against pathological bone loss in osteoporosis**

○ Alaa Terukawa (Terkawi)

Faculty of Medicine and Graduate School of Medicine, Hokkaido University

#### **O5-3 Bone anabolic effects of Sost deficiency partially offset Opg deficiency-induced catabolism in cortical bone**

○ Masanori Koide<sup>1)</sup>, Teruhito Yamashita<sup>1,2)</sup>, Yasuhiro Kobayashi<sup>1)</sup>, Midori Nakamura<sup>1,3)</sup>, Nobuyuki Udagawa<sup>1,3)</sup>

1) Institute for Oral Science, Matsumoto Dental University, Nagano, Japan, 2) Department of chemistry, Matsumoto Dental University, Nagano, Japan, 3) Department of Biochemistry, Matsumoto Dental University, Nagano, Japan

#### **O5-4 *Trans*-pairing regulates adaptive bone growth to surrounding tissues: a morphogenetic mechanism driving bone drift**

○ Yukiko Kuroda<sup>1)</sup>, Katsuhiko Kawaai<sup>1)</sup>, Koichi Matsuo<sup>1,2)</sup>

1) Laboratory of Cell and Tissue Biology, Keio University School of Medicine, Tokyo, Japan, 2) CIEM, Kanagawa, Japan

**O5-5 Spatial heterogeneity of osteocytes near the endosteal surface and its role in bone remodeling**

○ Toshiya Okawa, Erika Yamashita, Masaru Ishii

Department of Immunology and Cell Biology, Graduate school of Frontier BioSciences, The University of Osaka

**O5-6 The gut microbiota metabolite tryptamine and its analog 7-fluoro-tryptamine cause bone loss by acting on osteoblasts and osteoclasts**

○ Chisato Sampei, Tadayoshi Hayata

Department of Molecular Pharmacology, Graduate School of Pharmaceutical Science, Tokyo University of Science, Tokyo, Japan

**Symposium 11** 8:40-10:10

Chairs : Noriyuki Tsumaki (Department of Tissue Biochemistry, Graduate School of Medicine, The University of Osaka)  
Norio Amizuka (Ultrastructure of Hard Tissue, Faculty of Dental Medicine, Hokkaido University)

**The Leading Edge of Bone Remodeling: Cellular Coordination Among Osteoclasts, Osteoblasts, and Stem Cells**

**SY11-1 Ultrastructural Analysis of Bone Cells Maintaining Bone Remodeling**

○ Tomoka Hasegawa<sup>1)</sup>, Xuanyu Liu<sup>1)2)</sup>, Tomomaya Yamamoto<sup>1)</sup>

1) Ultrastructure of Hard Tissue, Faculty of Dental Medicine, Hokkaido University, 2) Japan Ground Self-Defense Force, Camp Shinmachi

**SY11-2 Osteoclast Niches: Insights from Tumors**

○ Masayuki Tsukasaki

Department of Biochemistry, School of Dentistry, Showa Medical University

**SY11-3 Decoding skeletal development from the endosteum: dynamics of skeletal stem and progenitor cells**

○ Yuki Matsushita

The Department of Skeletal Development and Regenerative Biology, Nagasaki University Graduate School of Biomedical Sciences, Nagasaki, Japan

**SY11-4 Characteristics of bone marrow-specific mesenchymal cells and their roles in hematopoiesis and bone metabolism**

○ Yoshiaki Omatsu

Graduate School of Frontier Biosciences, The University of Osaka

**KSBMR-JSBMR Joint Symposium** 10:15-11:45

Chairs : Hiroshi Takayanagi (Department of Immunology, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo)

Je-Yong Choi (Kyungpook National University, Korea)

**JSY2-1 Dynamic regulation of the intestinal calcium absorption and equilibrium of epithelial calcium handling responding to feeding behavior**

○ Ritsuko Masuyama

Ritsumeikan University, Japan

**JSY2-2 A challenge to prevent hip fracture**

○ Takeshi Miyamoto

Department of Orthopedic Surgery, Kumamoto University, Kumamoto, Japan

### **JSY2-3 Leveraging RTLS and Machine Learning for Dynamic Fall Risk Prediction**

○ Kyoung Min Kim<sup>1)2)3)4)</sup>, Dong Won Kim<sup>1)</sup>, Jihoon Seo<sup>1)</sup>, Sujin Kwon<sup>2)</sup>, Chan Min Park<sup>1)</sup>,  
Changho Han<sup>1)</sup>, Yujeong Kim<sup>1)</sup>, Jaewoong Kim<sup>1)</sup>, Chul Sik Kim<sup>2)</sup>, Seok Won Park<sup>2)</sup>,  
Dukyong Yoon<sup>1)3)4)</sup>

1) Department of Biomedical Systems Informatics, Yonsei University College of Medicine, Seoul, Republic of Korea,  
2) Department of Endocrinology, Internal Medicine, Yongin Severance Hospital, Yonsei University College of  
Medicine, Yongin, Republic of Korea, 3) Institute for Innovation in Digital Healthcare, Severance Hospital, Seoul,  
Republic of Korea, 4) Center for Digital Health, Yongin Severance Hospital, Yonsei University Health System, Yongin,  
Republic of Korea

### **JSY2-4 Targeting Age-Associated Muscle Atrophy and Systemic Decline with a Novel Myokine**

○ Dongryeol Ryu<sup>1)</sup>, Thanh T Nguyen<sup>1)</sup>, Yeongmin Kim<sup>1)</sup>, Yunju Jo<sup>2)</sup>, Beom-Jun Kim<sup>3)</sup>,  
Chang-Myung Oh<sup>1)</sup>

1) Department of Biomedical Science and Engineering, Gwangju Institute of Science and Technology (GIST),  
Gwangju, Republic of Korea, 2) Department of Microbiology, Wonkwang University School of Medicine, Iksan,  
Republic of Korea, 3) Department of Internal Medicine, Division of Endocrinology and Metabolism, Asan Medical  
Center, University of Ulsan College of Medicine, Seoul, Republic of Korea

## **Luncheon Seminar 6 12:10-13:10**

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Chair : Yoshiya Tanaka (Department of Molecular Targeted Therapeutics, The Department of Internal Medicine, School of Medicine,  
University of Occupational and Environmental Health)

### **LS6 Synovial Pathotype Analysis and JAK Inhibitor Therapy in Rheumatoid Arthritis**

○ Tetsuya Saito

Department of Rheumatology, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo (IST)

Co-sponsored by : AbbVie GK

## **Diversity Promotion and Career Path Committee Session 15:50-16:50**

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Chair : Noriko Komatsu (Medical Research Laboratory, Institute of Science Tokyo)

### **Foreign Experts Working in Japan, and the Research Labs that Host them in the Field of Bone Researches**

#### **JCS3-1 Can Diversity Be a Strength?: Insights from a Foreign Female Researcher's Journey in Japanese Academy**

○ Jiwon Lee

Biochemistry, Department of Oral Health Science, Hokkaido University, Sapporo, Japan

#### **JCS3-2 Diversity Drives Discovery: Building International and Inclusive Research Environments**

○ Hiroshi Takayanagi

Department of Immunology, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo

Oral Presentation 6 8:40-9:30

Chairs : Noriyuki Namba (Division of Pediatrics and Perinatology, Faculty of Medicine, Tottori University)  
Masahiro Yamamoto (Shimane University Faculty of Medicine)

Congenital Bone Metabolic Disorders

**O6-1** Comparison of Hounsfield unit in lumbar spine CT scans: pediatric patients with Marfan syndrome vs. patients with adolescent idiopathic scoliosis

○ Kosei Nagata<sup>1)2)</sup>, Yuki Taniguchi<sup>1)</sup>, Sakae Tanaka<sup>1)</sup>

1) The Department of Orthopedic and Spine Surgery, The University of Tokyo Hospital, Tokyo, Japan, 2) Department of Orthopedic Surgery, Saitama Medical University, Saitama Medical Center

**O6-2** Genetically Confirmed Vitamin D-Dependent Rickets Type 1A Presenting with Hypotonia, Motor Regression, Severe Rickets, and Hypocalcemia: A Case Report

○ Hirofumi Nakayama<sup>1)2)</sup>, Takaaki Shimada<sup>1)</sup>, Yusaku Itoh<sup>1)</sup>, Shinya Hattori<sup>1)</sup>, Takeshi Ishimi<sup>1)</sup>, Chieko Yamada<sup>1)</sup>, Yukako Nakano<sup>1)</sup>, Kenichi Yamamoto<sup>1)3)</sup>, Makoto Fujiwara<sup>1)</sup>, Yasuhisa Ohata<sup>1)</sup>, Yasuji Kitabatake<sup>1)</sup>

1) Department of Pediatrics, Osaka University Graduate School of Medicine, 2) The Department of Oral and Maxillofacial Surgery, Osaka University Graduate School of Dentistry, 3) Division of Health Sciences, Osaka University Graduate School of Medicine

**O6-3** Plasma Pyrophosphate Levels in Calcification of Joints and Arteries (CALJA): Insights into Disease Pathophysiology

○ Naoko Hidaka<sup>1)2)</sup>, Soichiro Kimura<sup>1)2)</sup>, Koichiro Furukawa<sup>1)2)</sup>, Natsuo Adachi<sup>2)3)</sup>, Koki Irie<sup>1)2)</sup>, Yoshitomo Hoshino<sup>1)2)</sup>, Hajime Kato<sup>1)2)</sup>, Nobuaki Ito<sup>2)4)</sup>

1) Division of Nephrology and Endocrinology, The University of Tokyo Hospital, Tokyo, Japan, 2) Osteoporosis Center, The University of Tokyo Hospital, Tokyo, Japan, 3) Department of Pediatrics, The University of Tokyo Hospital, Tokyo, Japan, 4) Division of Therapeutic Development for Intractable Bone Diseases, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo, Tokyo, Japan

**O6-4** A case of Hypophosphatasia suspected in childhood and confirmed by genetic testing in adulthood, with symptomatic improvement following enzyme replacement therapy

○ Takahito Asai<sup>1)2)</sup>, Hiroki Yamagami<sup>1)</sup>, Itsuro Endo<sup>1)3)</sup>

1) Department of Endocrinology and Metabolism, Tokushima University Hospital, Tokushima, Japan, 2) Department of Community Medicine and Medical Sciences, Tokushima University Graduate School of Biomedical Sciences, Tokushima, Japan, 3) Department of Bioregulatory Sciences, Tokushima University Graduate School of Biomedical Sciences, Tokushima, Japan

**O6-5** A case of hypophosphatasia with polyarthritis due to calcium pyrophosphate deposition (CPPD), misdiagnosed with seronegative rheumatoid arthritis

○ Koji Takemura<sup>1)2)</sup>, Jun Ogino<sup>1)</sup>

1) Department of Diabetes and Metabolism, Asahi General Hospital, Asahi, Chiba, Japan, 2) Research Center for Allergy and Clinical Immunology, Asahi General Hospital, Asahi, Chiba, Japan

Chairs : Maki Umakoshi (Kyushu University)

Koichi Murata (Department of Advanced Medicine for Rheumatic Diseases, Kyoto University Graduate School of Medicine)

## Secondary Osteoporosis

- 07-1**    **Characteristics of patients with non-surgical hypoparathyroidism (NS-HypoPT) and pseudohypoparathyroidism (PHP): Results from a Japanese national survey**
- Rieko Takatani<sup>1)</sup>, Seiji Fukumoto<sup>2)</sup>, Takuo Kubota<sup>3)</sup>, Masanori Minagawa<sup>4)</sup>, Noriyuki Namba<sup>5)</sup>, Keiichi Ozono<sup>6)</sup>, Daisuke Inoue<sup>7)</sup>
- 1) Faculty of Education, Chiba University, Japan, 2) Department of Medicine, Tamaki-Aozora Hospital, 3) Department of Pediatric Nephrology and Metabolism, Osaka Women's and Children's Hospital, Osaka Prefectural Hospital Organization, 4) Division of Endocrinology, Chiba Children's Hospital, 5) Division of Pediatrics and Perinatology, Faculty of Medicine, Tottori University, 6) Center for Promoting Treatment of Intractable Diseases, ISEIKAI International General Hospital, 7) Third Department of Medicine, Teikyo University Chiba Medical Center
- 07-2**    **Effects of Abaloparotide on Cancellous Bone Healing in a Rat Model of Glucocorticoid-Induced Osteoporosis**
- Akari Hisada, Manabu Akagawa, Kenta Tominaga, Yuuichi Ono, Kouji Nozaka, Hiroyuki Tsuchie, Yuuji Kasukawa, Naohisa Miyakoshi
- Department of Orthopedic, University of Akita
- 07-3**    **SGLT2 inhibitors restored the suppressed bone turnover in type 2 diabetes and reduced abnormal extra-skeletal collagen metabolism reflected by 1CTP/TRACP-5b**
- Kota Ishizawa, Reiko Inoue, Koji Takeuchi, Hatsumi Kuroyanagi, Fukuo Kosokabe, Yuria Takamura, Kenichi Tanaka, Yoshiyuki Ban, Daisuke Inoue
- The Third Department of Medicine, Teikyo University Chiba Medical Center
- 07-4**    **A study on the prevalence and clinical significance of Hypophosphatasia in ALP screening of all patients**
- Hiroyuki Izumida, Ryoichi Izumida, Shojiro Katoh
- Dept. of Orthop. Surg., Edogawa Hospital, Tokyo, Japan
- 07-5**    **Association between multimorbidity and fracture risk in type 2 diabetes**
- Masakazu Notsu<sup>1)</sup>, Miwako Yomota<sup>1)</sup>, Masahiro Yamamoto<sup>2)</sup>, Keizo Kanasaki<sup>1)</sup>
- 1) Department of Internal Medicine 1, Shimane University Faculty of Medicine, 2) Department of Clinical Nursing, Shimane University Faculty of Medicine

## Oral Presentation 8 10:30-11:10

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Chairs : Hiroko Kashiwagi (Department of Pediatrics, Osaka Hospital, Japan Community Healthcare Organization)  
Toshiyuki Ogata (Department of Orthopedic Surgery, Keio University School of Medicine)

### Abnormal Calcification

#### 08-1 The vitamin D receptor (VDR) in osteoblasts and osteocytes suppresses the progression of hyperphosphatemia, inflammation, and aberrant bone turnover in a preclinical model of CKD-MBD

○ Yuko Nakamichi<sup>1)2)</sup>, Ziyang Liu<sup>2)3)</sup>, Yuhang Cao<sup>2)</sup>, Kanji Horibe<sup>4)</sup>, Zhifeng He<sup>1)</sup>, Nobuyuki Udagawa<sup>1)2)5)</sup>

1) Institute for Oral Science, Matsumoto Dental University, 2) Graduate School of Oral Medicine, Matsumoto Dental University, 3) Hebei Medical University, 4) Department of Anatomy, Matsumoto Dental University, 5) Department of Biochemistry, Matsumoto Dental University

#### 08-2 NaPi2a internalization failure and FGF23 induction due to Tmem174 deficiency

○ Ayami Higashi<sup>1)</sup>, Yuji Shiozaki<sup>1)</sup>, Shion Shibahara<sup>1)</sup>, Megumi Koike<sup>1)</sup>, Hiroko Segawa<sup>1)2)</sup>

1) Department of Applied Nutrition, Tokushima University Graduate School of Biomedical Sciences, 2) Laboratory of Renal Nutrition and Metabolism, Institute of Photonics Human Health Frontier, Tokushima University

#### 08-3 Role of Membrane-Bound Phosphatase in the Balance Between Osteoclastogenesis and Adipogenesis Under Local Phosphorus Environment

○ Keito Matsubayashi<sup>1)</sup>, Hitoki Yamanaka<sup>2)</sup>, Ritsuko Masuyama<sup>1)</sup>

1) Graduate School of Gastronomy Management, Ritsumeikan University, 2) Research Center for Advanced Science and Technology, Shinshu University

#### 08-4 Calcium-sensing receptor agonist Upacalcet suppresses vascular calcification in klotho deficient mice

○ Tomoka Hasegawa<sup>1)</sup>, Tomomaya Yamamoto<sup>1)2)</sup>, Liu Xuanyu<sup>1)</sup>, Hiromi Hongo<sup>1)</sup>, Takashi Nakamura<sup>3)</sup>, Norio Amizuka<sup>1)</sup>

1) Ultrastructure of Hard Tissue, Faculty of Dental Medicine, Hokkaido University, 2) Department of Dentistry, Japan Ground Self-Defense Force, Camp Shinmachi, 3) Department of Medical Affairs, Sanwa Kagaku Kenkyusho Co., Ltd

## Oral Presentation 9 11:10-12:00

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Chairs : Kenji Hata (Department of Molecular and Cellular Biochemistry, Graduate School of Dentistry, The University of Osaka)  
Nobuyuki Udagawa (Matsumoto Dental University)

### Muscles, Tendons, and Ligaments ①

#### 09-1 Roles of MuRF1 in Skeletal Muscle Atrophy Associated with Amyotrophic Lateral Sclerosis

○ Tsukasa Tominari<sup>1)2)</sup>, Masaki Inada<sup>2)</sup>, Yoshitsugu Aoki<sup>1)</sup>

1) Department of Molecular Therapy, National Center of Neurology and Psychiatry, Tokyo, Japan, 2) Department of Biotechnology and Life Science, Tokyo University of Agriculture and Technology, Tokyo, Japan

#### 09-2 Roles of plasminogen activator inhibitor-1 (PAI-1) in aging-related muscle and bone loss in mice

○ Naoyuki Kawao, Takashi Ohira, Yuya Mizukami, Ayaka Aoyama, Hisatoshi Yamao, Hiroshi Kaji

Department of Physiology and Regenerative Medicine, Kindai University Faculty of Medicine

**O9-3 Clarification of mechanisms underlying heterotopic ossification in skeletal muscle**

○ Satoru Otowa<sup>1)</sup>, Hiroshi Sakai<sup>2)3)</sup>, Yuta Yanagihara<sup>2)3)</sup>, Kunihiko Watamori<sup>1)</sup>, Masaki Takao<sup>1)</sup>, Yuuki Imai<sup>2)3)</sup>

1) Department of Orthopaedic Surgery, Ehime University Graduate School of Medicine, Ehime, Japan, 2) Division of Integrative Pathophysiology, Proteo-Science Center, Ehime University, Ehime, Japan, 3) Department of Pathophysiology, Ehime University Graduate School of Medicine, Ehime, Japan

**O9-4 In vivo mouse model of calcific myonecrosis induced by injury**

○ Mai Kuratani<sup>1)</sup>, Sho Tsukamoto<sup>1)</sup>, Osamu Suzuki<sup>2)</sup>, Takenobu Katagiri<sup>1)</sup>

1) Division of Biomedical Sciences, Research Center for Genomic Medicine, Saitama Medical University, 2) Division of Biomaterials Science and Engineering (Division of Craniofacial Function Engineering), Tohoku University Graduate School of Dentistry

**O9-5 Extracellular Adenosine Contributes to the Hydrogen Peroxide-Induced Calcification of Cultured Tendon Cells**

○ Tomomi Sakuma<sup>1)2)3)</sup>, Ezura Yoichi<sup>3)4)5)</sup>, Chantida P. N. Mahasarakham<sup>3)8)</sup>, Lin Xin<sup>3)</sup>, Akira Nifuji<sup>6)</sup>, Masaki Noda<sup>7)</sup>

1) Department of Maxillofacial Surgery, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo, 2) Dental and oral surgery, Japanese Red Cross Medical Center, 3) Frontier Research Unit, Skeletal Molecular Pharmacology, Medical Research Institute, Tokyo Medical and Dental University, 4) Department of Joint Surgery and Sports Medicine, Institute of Science Tokyo, 5) Faculty of Health and Medical Science, Teikyo Heisei University, 6) Department of Pharmacology, Tsurumi University School of Dental Medicine, 7) Center for Stem Cell and Regenerative Medicine, Institute of Science Tokyo, 8) Department of Restorative Dentistry, Faculty of Dentistry, Khon Kaen University

**Luncheon Seminar 7 12:10-13:10**

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Chair : Toru Ogata (Department of Rehabilitation Medicine, The University of Tokyo)

**LS7 Locus and Future Perspectives of FOP Management: A 20-Year Journey and the Breakthrough of Palovarotene**

○ Hiroshi Kitoh

Department of Orthopaedic Surgery, Aichi Children's Health and Medical Center

Co-sponsored by : IPSEN Co., Ltd

Student-Resident Poster 17:00-18:00

Chair : Toshimi Michigami (Department of Bone and Mineral Research, Research Institute, Osaka Women's and Children's Hospital)

- SRP-1** Lepr positive bone marrow stromal cells protect Inflammaging and immune-senescence through Wnt secretion
- Dechao Zhu<sup>1</sup>, Zhifeng He<sup>2</sup>, Takumi Takahashi<sup>2</sup>, Rina Iwamoto<sup>2</sup>, Masayoshi Ishida<sup>2</sup>, Nobuyuki Udagawa<sup>3</sup>, Yasuhiro Kobayashi<sup>2</sup>
- 1) Graduate School of Institute for Oral Science, Matsumoto Dental University, 2) Institute for Oral Science, Matsumoto Dental University, 3) Department of Biochemistry, Matsumoto Dental University
- SRP-2** Discovery of a novel ligand targeting mutant VDR and evaluation of its therapeutic efficacy in a rat model of ricket
- Yuki Okamoto<sup>1</sup>, Souma Murata<sup>1</sup>, Koki Sadamori<sup>2</sup>, Eiichi Hinoi<sup>2</sup>, Fumihiro Kawagoe<sup>3</sup>, Sayuri Mototani<sup>4</sup>, Masashi Takano<sup>4</sup>, Satoko Kise<sup>1</sup>, Kana Yabu<sup>1</sup>, Toshie Fujishima<sup>4</sup>, Atsushi Kittaka<sup>4</sup>, Toshiyuki Sakaki<sup>1</sup>, Kaori Yasuda<sup>1</sup>
- 1) Graduate School of Engineering, Toyama Prefectural University, Toyama, Japan, 2) Gifu Pharmaceutical University, Gifu, Japan, 3) Tokyo University of Science, Tokyo, Japan, 4) Faculty of Pharmaceutical Sciences, Teikyo University, Tokyo, Japan
- SRP-3** Mechano-Immune Signal Transduction and Inflammation-Inducing Mechanisms in Osteocytes
- Yuta Ando<sup>1</sup>, Tetsuya Yoshimoto<sup>2</sup>, Masayuki Suzuki<sup>2</sup>, Shin Morimoto<sup>2</sup>, Mai Yoshino<sup>2</sup>, Gakuto Yasuda<sup>2</sup>, Tomoaki Shintani<sup>3</sup>, Shinya Hasegawa<sup>2</sup>, Mikihiro Kajiya<sup>2</sup>
- 1) School of Dentistry, Hiroshima University, Hiroshima, Japan, 2) Department of Innovation and Precision Dentistry, Hiroshima University Hospital, Hiroshima, Japan, 3) Center for Oral Clinical Examination, Hiroshima University Hospital, Hiroshima, Japan
- SRP-4** The contribution of bone marrow niche cells in bone regeneration
- Ren Takashima<sup>1,2</sup>, Nayu Saito<sup>1,2</sup>, So Nagata<sup>2</sup>, Yuki Matsushita<sup>2</sup>
- 1) School of Dentistry, Nagasaki University, 2) Department of Skeletal Development and Regenerative Biology
- SRP-5** Human Jawbone Alveolar Derived Skeletal Stem/Progenitor Cells for Craniofacial Bone Regeneration
- I Komang Evan Wijaksana<sup>1</sup>, Futaba Harada<sup>2</sup>, Yuya Kamano<sup>2</sup>, Masahiro Saito<sup>1</sup>
- 1) Division of Operative Dentistry, Department of Ecosystem Dentistry, Graduate School of Dentistry, Tohoku University, Sendai, Japan, 2) Division of Endodontics, Tohoku University Hospital, Sendai, Japan
- SRP-6** Bipixel method: analysis of symmetry and chirality in mesh structures of cortical canals
- Kanta Kumaki<sup>1</sup>, Katsuhiko Kawaai<sup>1</sup>, Shinobu Noji<sup>1</sup>, Yukiko Kuroda<sup>1</sup>, Koichi Matsuo<sup>1,2</sup>
- 1) Laboratory of Cell and Tissue Biology, Keio University School of Medicine, Tokyo, Japan, 2) CIEM
- SRP-7** Osteoclast-derived S1P promotes bone formation via enhanced autocrine PGE2 production in osteoblasts
- Rena Shiomitsu, Moe Sugasaki, Michiko Hirata, Masaki Inada
- Department of Biotechnology and Life Science, Tokyo University of Agriculture and Technology

Poster Session 1 17:00-18:00

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- P1-1** Increase in Bone Mineral Density with 7 Years of Continuous Treatment with Bisphosphonates or Denosumab in Patients Aged 65 Years and Older  
○ Yuji Kasukawa<sup>1)</sup>, Hiroyuki Tsuchie<sup>2)</sup>, Naohisa Miyakoshi<sup>2)</sup>  
1) Department of Rehabilitation Medicine, Akita University Hospital, Akita, Japan, 2) Department of Orthopedic Surgery, Akita University Graduate School of Medicine
- P1-2** A novel treatment strategy using raloxifene before and after romosozumab  
○ Kazuaki Mineta<sup>1)</sup>, Toshihiko Nishisho<sup>2)</sup>  
1) The Orthopedic Department, Tokushima Kensei Hospital, Tokushima, Japan, 2) The Orthopedic Department, University of Tokushima, Tokushima, Japan
- P1-3** A Case Report of Pregnancy- and Lactation-Associated Osteoporosis Resulting in Femoral Neck Fracture Requiring Total Hip Arthroplasty: Diagnostic Delay and Treatment Decision-Making in a Patient Desiring Future Pregnancy  
○ Naoto Nishino<sup>1)</sup>, Ayako Tominaga<sup>2)</sup>  
1) Department of Orthopaedic Surgery, Tokyo Women's Medical University Yachiyo Medical Center, Chiba, Japan, 2) Department of Orthopaedic Surgery, Tokyo Women's Medical University Hospital, Tokyo Women's Medical University, Tokyo, Japan
- P1-4** A Case of Atypical Femoral Fracture Successfully Treated with Romosozumab  
○ Arisa Yoshida<sup>1)</sup>, Ayako Tominaga<sup>2)</sup>, Keiji Wada<sup>3)</sup>, Jun Sugaya<sup>2)</sup>, Motohiro Haseyama<sup>2)</sup>  
1) Tokyo Women's Medical University Yachiyo Medical Center, 2) Department of Orthopaedic Surgery, Tokyo Women's Medical University, 3) Spine Center, Tomei Atsugi Hospital
- P1-5** A case of Atypical Femoral Fracture during Denosumab therapy in a patient with chronic renal Failure on maintenance hemodialysis  
○ Ryutaro Kuriyama  
Kanmon Medical Hospital, Yamaguchi, Japan
- P1-6** Temporal Trends and Regional Disparities in Hip Fracture Surgery in South Korea  
○ Young-Kyun Lee  
Seoul National University Bundang Hospital, Korea

Poster Session 2 17:00-18:00

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- P2-1** Insight into the effect of upacicalcet on the basis of the serum calcium concentration  
○ Takashi Nakamura  
Department of Medical Affairs, Sanwa Kagaku Kenkyusho, Co.,Ltd, Nagoya, Japan
- P2-2** Changes in Bone Mineral Density and Bone Microarchitecture in Diabetes and Prediabetes: A Comprehensive Bone Assessment Using DXA, TBS, and 3D-Shaper  
○ Jiantao Sun  
Department of Sports Medicine and Sportology, Graduate School of Medicine, Juntendo University, Tokyo, Japan

**P2-3 A case of SATB2-associated syndrome with elevated alkaline phosphatase, low bone mineral density, and recurrent fractures**

- Kenichi Yamamoto<sup>1)2)</sup>, Shinya Hattori<sup>2)</sup>, Yusaku Ito<sup>2)</sup>, Takaaki Shimada<sup>2)</sup>, Takeshi Ishimi<sup>2)</sup>, Chieko Yamada<sup>2)</sup>, Yukako Nakano<sup>2)</sup>, Hirofumi Nakayama<sup>2)3)</sup>, Makoto Fujiwara<sup>2)</sup>, Taichi Kitaoka<sup>4)</sup>, Keiichi Ozono<sup>5)</sup>, Yasuhisa Ohata<sup>2)</sup>, Yasuji Kitabatake<sup>2)</sup>

1) Laboratory of Children's health and Genetics, Division of Health Sciences, The University of Osaka, Suita, Japan, 2) Department of Pediatrics, The University of Osaka, Suita, Japan, 3) Department of Oral and Maxillofacial Surgery, The University of Osaka Graduate School of Dentistry, Suita, Japan, 4) Department of Pediatrics, ISEIKAI International General Hospital, Osaka, Japan, 5) Center for Promoting Treatment of Intractable Diseases, ISEIKAI International General Hospital, Osaka, Japan

**P2-4 Silicosis-induced osteoporosis is mediated by circulating RANKL**

- Yoshihiro Hasegawa<sup>1)2)3)</sup>

1) Division of Molecular Medical Biochemistry, Department of Biochemistry, Sapporo Medical University School of Medicine, 2) Division of Respiratory Medicine and Allergology, Department of Internal Medicine, Sapporo Medical University School of Medicine, 3) Division of Pulmonary, Critical and Sleep Medicine, Department of Internal Medicine, University of Cincinnati

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**Poster Session 3 17:00-18:00**

**P3-1 Stepwise disruption of the glenohumeral stabilizing structures promotes subchondral bone resorption and cuff tear arthropathy via superior migration of the humeral head in a rat model**

- Kohei Uekama<sup>1)2)</sup>, Tomohiro Iuchi<sup>1)3)</sup>, Takayuki Ide<sup>1)4)</sup>, Kento Shimano<sup>1)</sup>, Yusuke Masuda<sup>1)</sup>, Hiroki Tawaratsumida<sup>1)</sup>, Toshiro Ijuin<sup>1)</sup>, Shingo Maeda<sup>2)</sup>, Noboru Taniguchi<sup>1)2)3)4)</sup>

1) Department of Orthopaedics, Kagoshima University Graduate School of Medicine, 2) Department of Bone and Joint Medicine, Kagoshima University, Kagoshima, Japan, 3) Department of Medical Joint Materials, Kagoshima University, Kagoshima, Japan, 4) Department of Locomotory Organ Regeneration, Kagoshima University, Kagoshima, Japan

**P3-2 Effect of chemotherapy drug on soft and hard tissue healing in murine extraction sockets**

- Shinichiro Kuroshima<sup>1)2)</sup>, Itsuki Matsuzawa<sup>1)</sup>, Tomoya Ishimaru<sup>1)</sup>, Yelidana Yesibulati<sup>1)</sup>, Kaede Kobayashi<sup>1)</sup>, Sota Shundo<sup>1)</sup>, Tomoka Hasegawa<sup>3)</sup>

1) Department of Fixed and Regenerative Prosthodontics, Division of Oral Functional Science, Faculty of Dental Medicine, Hokkaido University, 2) Department of Applied Prosthodontics, Graduate School of Biomedical Sciences, Nagasaki University, 3) Ultrastructure of Hard Tissue, Faculty of Dental Medicine, Hokkaido University

**P3-3 Development of a Rapid and Comprehensive Sequential Protein Extraction Method for Bone Proteomics**

- Haruaki Ishikawa<sup>1)</sup>, Yosuke Hashimoto<sup>1)</sup>, Tetsuya Yoshimoto<sup>2)</sup>, Mikihito Kajiya<sup>2)</sup>, Yasuo Uchida<sup>1)</sup>

1) Molecular Systems Pharmaceuticals, Graduate School of Biomedical and Health Sciences, Hiroshima University, 2) Department of Innovation & Precision Dentistry, Hiroshima University Hospital

**P3-4 Effects of hypergravity on osteoclasts and the signaling molecules involved in their response**

- Natsuhiro Takahashi<sup>1)2)3)</sup>, Akihiko Fujita<sup>1)2)4)</sup>, Yuki Azetsu<sup>1)2)</sup>, Akiko Karakawa<sup>1)2)</sup>, Masamichi Takami<sup>1)2)</sup>, Masahiro Chatani<sup>1)2)</sup>

1) Department of Pharmacology Graduate School of Dentistry Showa Medical University, Tokyo, Japan, 2) Pharmacological Research Center Showa Medical University, Tokyo, Japan, 3) Department of Medical and Dental Cooperative Dentistry Graduate School of Dentistry Showa Medical University, Tokyo, Japan, 4) Department of Orthodontics Graduate School of Dentistry Showa Medical University, Tokyo, Japan

- P3-5** Mesenchymal stem cells from Nupr1-deficient mice exhibit enhanced osteogenic potential and promote the healing of femoral bone defects
- Koichiro Kishikawa, Hirohito Hirata, Masaya Ueno, Akiko Kukita, Tadatugu Morimoto  
Saga University Hospital Orthopedics, Saga, Japan
- P3-6** Effects of Low-Intensity Pulsed Ultrasound (LIPUS) on Promoting Healing in a Rat Model of Traumatic Root Fracture
- Kuniomi Nakamura<sup>1)</sup>, Kouki Hidaka<sup>2)</sup>, Motoki Isawa<sup>1)</sup>, Yuko Mikuni-Takagaki<sup>3)</sup>, Yukie Nakai<sup>1)</sup>  
1) Department of Pediatric Dentistry, Kanagawa Dental University, Kanagawa, Japan, 2) Department of Conservative restoration, Kanagawa Dental University, Kanagawa, Japan, 3) Kanagawa Dental University, Kanagawa, Japan
- P3-7** Induction of Lipocalin-2 Expression in Osteoblasts by Isoflavone-Related Compounds and the Effects of Lipocalin-2 on Skin Cells
- Takuya Sugita, Yusuke Takahara  
Groupwide Research and Development Tokyo Research Laboratory, Noevir Co. Ltd.,
- P3-8** A novel role of NFATc4 in osteoblast differentiation and osteoclastogenic support in vitro
- Wang Cheng, Mikihiro Hayashi, Tomoki Nakashima  
Department of Cell Signaling, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo, Tokyo, Japan

**Symposium 12** 8:30-10:00

Chairs : Nobuaki Ito (Division of Therapeutic Development for Intractable Bone Diseases The University of Tokyo)  
Itsuro Endo (Department of Bioregulatory Sciences, Tokushima University Graduate School of Biomedical Sciences)

**Ossification and Calcification and Phosphate Metabolism: Molecular Mechanisms Bridging Basic Science and Clinical Practice**

**SY12-1 Basic Research on Bone Mineralization: Insights from iPS Cell Models of XLH and HPP**

○Toshimi Michigami, Miwa Yamazaki  
Department of Bone and Mineral Research, Research Institute, Osaka Women's and Children's Hospital

**SY12-2 Phosphate-Sensing—the function of FGFR1 in regulatory mechanism of FGF23 secretion**

○Yuichi Takashi  
Department of Endocrinology and Diabetes, Fukuoka University School of Medicine

**SY12-3 Role of PHEX in the pathway from phosphate sensing to FGF23 secretion**

○Yoshitomo Hoshino  
Division of Nephrology and Endocrinology, The University of Tokyo Hospital, Tokyo, Japan

**Special Lecture 2** 10:10-11:10

Chair : Daisuke Inoue (Third Department of Medicine, Teikyo University Chiba Medical Center)

**SL2-1 Bone morphogenetic proteins and activins: their multiple functions and clinical application**

○Kohei Miyazono<sup>1) 2)</sup>  
1) Department of Applied Pathology, Graduate School of Medicine, The University of Tokyo, 2) Laboratory for Cancer Invasion and Metastasis, RIKEN Center for Integrative Medical Sciences

**Invited Lecture 2** 11:20-12:20

Chair : Toshimi Michigami (Department of Bone and Mineral Research, Research Institute, Osaka Women's and Children's Hospital)

**IL2-1 Hypophosphatasia in adults: clinical manifestation and burden of disease**

○Lothar Seefried  
Clinical Osteology and Clinical Trial Unit, University of Wuerzburg, Wuerzburg, Germany

**Luncheon Seminar 8** 12:35-13:35

Chair : Toshio Matsumoto (Tokushima University)

**LS8 Management of Osteoporosis; Physicians' perspective**

○Daisuke Inoue  
Third Department of Medicine, Teikyo University Chiba Medical Center, Japan

**LS8 Perspectives on Osteoporosis Treatment from an Orthopedic Surgeon**

○ Sakae Tanaka

Department of Orthopaedic Surgery, The University of Tokyo

Co-sponsored by : Astellas Pharma Inc. / Amgen K.K.

**Symposium 13** 13:45-15:15

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Chairs : Toshimi Michigami (Department of Bone and Mineral Research, Research Institute, Osaka Women's and Children's Hospital)  
Sumito Ogawa (Department of Geriatric Medicine, Graduate School of Medicine, The University of Tokyo)

**New Insights on the Influence of Aging and Sex Differences on Bone Metabolism**

**SY13-1 Targeting cellular senescence for bone regeneration: Rejuvenating the bone marrow microenvironment and restoring osteogenic capacity via Dkk1 inhibition**

○ Masayoshi Ishida

Institute for Oral Science, Matsumoto Dental University, Nagano, Japan

**SY13-2 Molecular mechanisms of vascular calcification**

○ Masayuki Tsukasaki

Department of Biochemistry, School of Dentistry, Showa Medical University

**SY13-3 Androgen receptor-mediated regulation of skeletal muscle fibers**

○ Hiroshi Sakai<sup>1)2)</sup>

1) Division of Integrative Pathophysiology, Proteo-Science Center, PIAS, Ehime University, Ehime, Japan,

2) Department of Pathophysiology, Ehime University Graduate School of Medicine, Ehime, Japan

**SY13-4 Intergenerational transmission of sex differences and exercise-related information**

○ Joji Kusuyama

Department of Biosignal and Inheritance, Graduate School of Medical and Dental Sciences, Institute of Science Tokyo

Symposium 14 8:30-10:00

Chair : Sakae Tanaka (Department of Orthopaedic Surgery, The University of Tokyo)

**Bone Metabolism and Mechanosensing/Mechanical Responses**

**SY14-1 Dynamics of articular synovium regulated by mechanical loading**

○ Yasunori Omata

The University of Tokyo Hospital, Bone and Cartilage Regenerative Medicine

**SY14-2 Regulation of the Crystallographic Microstructure of Bone Matrix in Response to Mechanical Stress**

○ Aira Matsugaki, Takayoshi Nakano

Division of Materials and Manufacturing Science, Graduate School of Engineering

**SY14-3 Mechanical Stresses Shaping Tissue and Organ Homeostasis: Beneficial vs. Detrimental**

○ Yasuhiro Sawada

Cell Signaling Laboratory, Advanced Research Departments, Institute of Science Tokyo

**SY14-4 Is it osteocytes or nerves that sense mechanical loading on the bones?**

○ Shingo Sato<sup>1)2)3)</sup>, Shohei Tsujino<sup>3)</sup>, Hiroki Ochi<sup>4)</sup>

1) Center for Innovative Cancer Treatment, Institute of Science Tokyo, Tokyo, Japan, 2) Palliative Care Center, Institute of Science Tokyo, Tokyo, Japan, 3) Department of Orthopaedic Surgery, Institute of Science Tokyo, Tokyo, Japan, 4) Department of Immunology, Faculty of Medicine, Saitama Medical University, Saitama, Japan

Oral Presentation 10 10:10-11:00

Chairs : Midori Nakamura (Department of Biochemistry, Matsumoto Dental University)

Koichi Matsuo (Central Institute for Experimental Medicine and Life Science (CIEM))

**Cytokines**

**O10-1 ALK2 prevents GDF5 signaling by sequestering BMPR-II from ALK3**

○ Sho Tsukamoto, Mai Kuratani, Takenobu Katagiri

Division of Biomedical Sciences, Research Center for Genomic Medicine, Saitama Medical University, Saitama, Japan

**O10-2 The role of EGF-EGFR signaling in trauma-induced heterotopic ossification**

○ Yuki Azetsu<sup>1)2)</sup>, Mana Ishikawa<sup>1)3)</sup>, Aiko Hirayama<sup>1)4)</sup>, Akiko Karakawa<sup>1)2)</sup>, Masahiro Chatani<sup>1)2)</sup>, Masamichi Takami<sup>1)2)</sup>

1) Department of Pharmacology, Graduate School of Dentistry, Showa Medical University, Tokyo, Japan, 2) Pharmacological Research Center, Showa Medical University, Tokyo, Japan, 3) Department of Pharmacology, Graduate School of Pharmacy, Showa Medical University, Tokyo, Japan, 4) Department of Anesthesiology, Graduate School of Dentistry, Showa Medical University, Tokyo, Japan

**O10-3 PTH accelerates fracture healing in aged bone by inducing callus vascular remodeling and perivascular osteoprogenitor expansion**

○ Toshiyuki Ogata, Takahito Iga, Masaya Nakamura

Department of Orthopedic Surgery, Keio University School of Medicine, Tokyo, Japan

**O10-4 The early PTH-responsive gene Got1 negatively regulates osteoblast differentiation**

○Hinako Tachibana, Chisato Sampei, Tadayoshi Hayata

Department of Molecular Pharmacology, Graduate School of Pharmaceutical Sciences, Tokyo University of Science, Tokyo, Japan

**O10-5 VEGF-Dependent Maintenance of Epiphyseal Vasculature and Bone Homeostasis Preserved After Aging**

○Hideki Kise<sup>1)</sup>, Takahito Iga<sup>1)2)</sup>, Masaya Nakamura<sup>1)</sup>

1) Department of Orthopaedic Surgery, Keio University, Tokyo, Japan, 2) Department of Anatomy, Keio University School of Medicine

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**Oral Presentation 11 11:20-12:10**

Chairs : Ko Chiba (Department of Orthopedic Surgery, Nagasaki University Hospital)  
Kazuhiro Maeda (The Jikei University)

**Rheumatoid Arthritis and Osteoarthritis**

**O11-1 Estrogen receptor alpha signaling in lining layer fibroblasts contributes to homeostasis of the synovial lining layer via Clic5 expression, followed by suppressing arthritis pathology**

○Noritaka Saeki<sup>1)2)3)</sup>, Takayoshi Yamashita<sup>4)</sup>, Yuuki Imai<sup>2)5)</sup>

1) Research Coordination and Technical Development Office, Ehime University, Ehime, Japan, 2) Division of Integrative Pathophysiology, Proteo-Science Center, Ehime University, Ehime, Japan, 3) Department of Applied Chemistry, Graduate School of Science and Engineering, Ehime University, Ehime, Japan, 4) Department of Computer Science, Graduate School of Engineering, Chubu University, Aichi, Japan, 5) Department of Pathophysiology, Graduate School of Medicine, Ehime University, Ehime, Japan

**O11-2 The Role of Prg4-Positive Synovial Fibroblasts and Rspo2 in Chondrocyte Formation in a Mouse Model of Knee Osteoarthritis**

○Yasutaka Watanabe<sup>1)</sup>, Asuka Terashima<sup>1)</sup>, Yusuke Arino<sup>2)</sup>, Yasuhide Iwanaga<sup>1)</sup>, Yasunori Omata<sup>1)</sup>, Sakae Tanaka<sup>1)</sup>, Taku Saito<sup>1)</sup>

1) The Graduate School of Medicine, University of Tokyo, Tokyo, Japan, 2) Japan Community Healthcare Organization Tokyo Yamate Medical Center

**O11-3 Analysis of the effects of inhibiting Sox9 SUMOylation on the onset and progression of knee osteoarthritis**

○Kohei Arakawa, Masafumi Inui

Meiji University, School of Agriculture, Department of Life Sciences, Laboratory of Animal Regeneration Systemology

**O11-4 Subchondral bone loss in a rat rotator cuff tear arthropathy model fails to recover even after 6 months**

○Takayuki Ide<sup>1)2)</sup>, Tomohiro Iuchi<sup>1)3)</sup>, Yusuke Masuda<sup>1)</sup>, Kohei Uekama<sup>1)4)</sup>, Kento Shimano<sup>1)</sup>, Hiroki Tawaratsumida<sup>1)</sup>, Toshiro Ijuin<sup>1)</sup>, Shingo Maeda<sup>4)</sup>, Noboru Taniguchi<sup>1)2)3)4)</sup>

1) Department of Orthopaedic Surgery, Kagoshima University, 2) Department of Locomotory Organ Regeneration, Kagoshima University, 3) Department of Medical Joint Materials, Kagoshima University, 4) Department of Bone and Joint Medicine, Kagoshima University

**O11-5 Bone metabolism in rheumatoid arthritis is not determined by a single factor: a multifactorial analysis in patients receiving 5-year baricitinib therapy**

○Keio Ayabe

Keiyu Orthopedic Hospital

## Luncheon Seminar 9 12:35-13:35

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Chairs : Takuo Kubota (Department of Pediatric Nephrology and Metabolism, Osaka Womens and Childrens Hospital, Osaka Prefectural Hospital Organization)

Yasuo Imanishi (Department of Vascular Medicine, Osaka Metropolitan University Graduate School of Medicine)

**LS9 X-linked hypophosphatemia management in children: Clinical practice guidelines for the diagnosis and management of X-linked hypophosphatemia in Japan**

○ Junko Kanno

Department of Pediatrics, Tohoku University Hospital, Sendai, Japan

**LS9 Treatment Effects of Conventional Therapy and Burosumab on Osteomalacia in Adult Patients with XLH**

○ Nobuaki Ito

Division of Therapeutic Development for Intractable Bone Diseases, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo, Japan

Co-sponsored by : Kyowa Kirin Co., Ltd.

## Symposium 15 13:45-15:15

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Chairs : Keiichi Oozono (Center for Promoting Treatment of Intractable Diseases, ISEIKAI International General Hospital)

Seiji Fukumoto (Tamaki-Aozora Hospital)

### Basic and Clinical Aspects of Rare Bone Diseases

**SY15-1 Progress in Fibrodysplasia Ossificans Progressiva (FOP) Research: From Discovery of ALK2 to the Current State of Drug Development**

○ Sho Tsukamoto

Division of Biomedical Sciences, Advanced Research Center, Saitama Medical University, Saitama, Japan

**SY15-2 The pathogenic mechanism of hypophosphatasia: Analysis of ALPL deleted human iPS cell model**

○ Miwa Yamazaki, Toshimi Michigami

Department of Bone and Mineral Research, Research Institute, Osaka Women's and Children's Hospital

**SY15-3 Effects of Bisphosphonate Administration on Bone Metabolism in Hypophosphatasia: Cautions for Atypical Cases and Insights from Basic Research**

○ Aki Takahashi

Department of Pharmacology, Tokyo Dental College, Tokyo, Japan

**SY15-4 McCune-Albright Syndrome and Fibrous Dysplasia: An Update on Molecular Pathophysiology and Therapeutic Strategies**

○ Tomohiro Ishii

Tokyo Metropolitan Children's Medical Center

Symposium 16 8:30-10:00

Chairs : Haruhiko Akiyama (Department of Orthopaedic Surgery, Gifu University Graduate School of Medicine)  
Naohisa Miyakoshi (Department of Orthopedic Surgery, Akita University Graduate School of Medicine)

New Trends in Bone Formation

**SY16-1** Bone regeneration from the perspective of bone matrix orientation

○ Takayoshi Nakano

Biomaterials & Structural Materials Design Area, The University of Osaka, Osaka, Japan

**SY16-2** Biomechanical Assessment of Osteoporosis Pharmacotherapy via Finite Element Analysis

○ Taro Mawatari

KKR Hamanomachi Hospital

**SY16-3** Next-Generation Biomaterials in Orthopedic Surgery: From Research and Development to Clinical Application of OCP-Based Bone Grafts

○ Yu Mori

Department of Orthopaedic Surgery, Tohoku University Graduate School of Medicine

**SY16-4** Development of implants for fracture treatment that promotes bone formation

○ Kosei Takata, Takeshi Miyamoto

Dept. of Orthop. Surg., Kumamoto Univ., Kumamoto, Japan

Oral Presentation 12 10:10-11:00

Chairs : Kenichi Tanaka (Third Department of Medicine, Teikyo University Chiba Medical Center)  
Yuichi Takashi (Department of Endocrinology and Diabetes, Fukuoka University School of Medicine)

Metabolic Bone Disorders

**O12-1** Structural Characterization of *PHEX* Gene Duplication Combined with a Nonsense Mutation Using Short- and Long-Read NGS in a Patient with FGF23-Related Hypophosphatemic Osteomalacia

○ Eisuke Tomatsu, Yasumasa Yoshino, Sahoko Sekiguchi-Ueda, Takeshi Takayanagi, Atsushi Suzuki

Department of Endocrinology, Diabetes and Metabolism, Fujita Health University, Aichi, Japan

**O12-2** Development of new pharmacological therapies for fibrous dysplasia

○ Makoto Abe<sup>1</sup>, Katsutoshi Hirose<sup>2</sup>, Naoya Saeki<sup>1,3</sup>, Rinna Kanai<sup>1,4</sup>, Yuki Ikeda<sup>1</sup>,  
Satoru Toyosawa<sup>2</sup>, Shinsuke Ohba<sup>1</sup>

1) Dept of Tissue and Dev Biol, The University of Osaka Graduate School of Dentistry, Osaka, Japan, 2) Dept of Oral Pathology, The University of Osaka Graduate School of Dentistry, Osaka, Japan, 3) Dept of Special Needs Dentistry, The University of Osaka Graduate School of Dentistry, Osaka, Japan, 4) Dept of Fixed Prosthodontics and Orofacial Function

**O12-3** Vosoritide alters spinal and lower limb alignment in children with achondroplasia: a 3-year longitudinal study

○ Kenta Sawamura<sup>1</sup>, Masaki Matsushita<sup>1</sup>, Hiroshi Kitoh<sup>2</sup>

1) Department of Orthopaedic Surgery, Nagoya University, Nagoya Japan, 2) Department of Orthopaedic Surgery, Aichi Childrens Health and Medical Center, Obu, Japan

**O12-4** Osterix mediates aberrant FGF23 production via osteogenic differentiation in phosphaturic mesenchymal tumors causing tumor-induced osteomalacia

○ Yasuo Imanishi<sup>1)</sup>, Yuki Nagata<sup>1)</sup>, Masanori Emoto<sup>2)</sup>

1) Department of Vascular Medicine, Osaka Metropolitan University Graduate School of Medicine, Osaka, Japan,

2) Department of Metabolism, Endocrinology, and Molecular Medicine, Osaka Metropolitan University Graduate School of Medicine, Osaka, Japan

**O12-5** Comparison of five cases of pseudoachondroplasia in three families with identified pathogenic variants in the COMP gene

○ Takeshi Ishimi<sup>1)</sup>, Takaaki Shimada<sup>1)</sup>, Shinya Hattori<sup>1)</sup>, Yuusaku Ito<sup>1)</sup>, Hirohumi Nakayama<sup>1)2)</sup>, Kennichi Yamamoto<sup>3)</sup>, Makoto Fujiwara<sup>1)</sup>, Yasuhisa Ohata<sup>1)</sup>, Yasuji Kitabatake<sup>1)</sup>

1) Department of Pediatrics, Graduate School of Medicine, The University of Osaka, 2) Department of Oral and

Maxillofacial Surgery, Graduate School of Dentistry, The University of Osaka, 3) Division of Health Sciences, Graduate School of Medicine, The University of Osaka

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**Oral Presentation 13** 11:20-12:20

Chairs : Masahiro Chatani (Showa Medical University)

Kyoko Hashimoto (Department of Immunology, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo)

**Signal Transduction and Transcription Factors**

**O13-1** Regulatory mechanisms of the Hedgehog signaling-related transcription factor Gli in osteoblast specification

○ Asami Tsuji<sup>1)2)</sup>, Yuki Ikeda<sup>1)</sup>, Yoshifumi Takahata<sup>3)</sup>, Hironori Hojo<sup>4)</sup>, Makoto Abe<sup>1)</sup>, Shinsuke Ohba<sup>1)</sup>

1) Department of Tissue and Developmental Biology, Graduate School of Dentistry, The University of Osaka,

2) Department of Oral & Maxillofacial Oncology and Surgery, Graduate School of Dentistry, The University of Osaka,

3) Genome Editing Research and Development Unit, Graduate School of Dentistry, The University of Osaka,

4) Bioinformatics Research Unit, Graduate School of Dentistry, The University of Osaka

**O13-2** Skeletal phenotype of BNIP3/NIX-deficient mice under mechanical loading

○ Xianghe Xu<sup>1)2)</sup>, Takayuki Mito<sup>1)</sup>

1) Department of Cellular Physiology, Graduate School of Medical Sciences, Kyushu University, Fukuoka, Japan,

2) Department of Orthopedics, The Fifth Affiliated Hospital of Sun Yat-sen University, Zhuhai, Guangdong, China

**O13-3** The Role of Runx2 in Amphibian Osteogenesis

○ Akira Yukita<sup>1)2)</sup>

1) Division of Science Education, Faculty of Education, Shizuoka University, Shizuoka, Japan, 2) Department of

Science, Graduate School of Integrated Science and Technology, Shizuoka University, Shizuoka, Japan

**O13-4 Identification of a skeleton specific DLX5 distal enhancer and involvement of the enhancer in bone homeostasis**

○ Shinse Fujita<sup>1)2)3)</sup>, Shoichiro Tani<sup>1)2)4)</sup>, Yasuhide Iwanaga<sup>1)2)5)</sup>, Hiroyuki Okada<sup>1)2)</sup>, Taku Saito<sup>2)</sup>, Sakae Tanaka<sup>2)</sup>, Shinsuke Ohba<sup>6)</sup>, Yuichi Tei<sup>1)3)</sup>, Hironori Hojo<sup>1)3)7)</sup>

1) Clinical Biotechnology, Center for Disease Biology and Integrative Medicine, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan, 2) Department of Orthopaedic Surgery, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan, 3) Department of Bioengineering, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan, 4) Children's Medical Center Research Institute at the University of Texas Southwestern, Dallas, TX, USA, 5) Department of Chemistry & Biotechnology, Graduate School of Engineering, The University of Tokyo, Tokyo, Japan, 6) Department of Tissue and Developmental Biology, Graduate School of Dentistry, The University of Osaka, Osaka, Japan, 7) Bioinformatics Research Unit, Graduate School of Dentistry, The University of Osaka, Osaka, Japan

**O13-5 The transcriptional regulator REST is involved in age-related bone loss**

○ Norizumi Imazu<sup>1)2)</sup>, Kiyohito Naito<sup>1)2)3)</sup>, Takamaru Suzuki<sup>1)</sup>, Kenjiro Kawamura<sup>1)2)</sup>, So Kawakita<sup>1)</sup>, Tatsuki Ito<sup>1)2)</sup>, Shoichiro Ishii<sup>1)</sup>, Toshiomi Takahashi<sup>1)</sup>, Yuki Tanaka<sup>4)</sup>, Masaki Inada<sup>4)</sup>, Muneaki Ishijima<sup>1)2)3)</sup>

1) Department of Orthopaedics, Juntendo University Faculty of Medicine, 2) Department of Medicine for Orthopedics and Motor Organ, Juntendo University Graduate School of Medicine, 3) Department of Community Medicine and Research for Bone and Joint Diseases, Juntendo University Graduate School of Medicine, 4) Cooperative Major of Advanced Health Science, Tokyo University of Agriculture and Technology

**O13-6 Epigenetic Regulation by beta-catenin in Osteoblasts: Analysis of Wnt-related Co-factors Focusing on the SWI/SNF Complex**

○ Yoshiaki Kanemoto<sup>1)2)3)4)5)</sup>, Shigeaki Kato<sup>2)3)4)</sup>

1) Endowed Chair Department of Medical Epigenomics Research, Fukushima Medical University School of Medicine, 2) Dept. of Basic Pathology, Fukushima Medical University School of Medicine, 3) Faculty of Pharmacy, Iryo Sosei University, 4) Dept. of Med. Epigenetics, Res. Inst. of Innovative Med., Tokiwa Foundation, 5) Dept. of Surg., Joban Hosp., Tokiwa Foundation

**Oral Presentation 14 13:45-14:35**

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Chairs : Yoshifumi Takahata (Genome Editing Research and Development Unit, Graduate School of Dentistry, The University of Osaka)  
Tomohiko Murakami (Department of Molecular and Cellular Biochemistry, Graduate School of Dentistry, The University of Osaka)

**Chondrocytes and Cartilage**

**O14-1 Abnormal Resting Zone Expansion and PAPP2 Expression in the Growth Plate of an Achondroplasia Model Mouse**

○ Nanao Horike<sup>1)2)</sup>, Noriyuki Tsumaki<sup>1)2)3)</sup>

1) Department of Tissue Biochemistry, Graduate School of Medicine, Osaka University, 2) Department of Tissue Biochemistry, Graduate School of Frontier Biosciences, Osaka University, 3) WPI-PRiME (Institute for Advanced Study of Human Biology / Human Metaverse Disease Research Center), Osaka University

**O14-2 Vascularization enables step-wise differentiation from chondrogenic to osteogenic cells in the epiphysis**

○ Yuki Matsumoto<sup>1)</sup>, Takahito Iga<sup>1)2)</sup>

1) Department of Orthopaedic Surgery, Keio University School of Medicine, 2) Department of Anatomy, Keio University School of Medicine

**O14-3 PTH-Induced Impairment of Hypertrophic Chondrocyte Processes and Endochondral Ossification**

○ Nobuhito Nango<sup>1)</sup>, Shogo Kubota<sup>1)</sup>, Atsushi Momose<sup>2)</sup>, Koichi Matsuo<sup>3)4)</sup>

1) Ratoc System Engineering Co., Ltd. Tokyo, Japan, 2) Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Sendai, Japan, 3) Laboratory of Cell and Tissue Biology, Keio University School of Medicine, Tokyo, Japan, 4) CIEM, Kanagawa, Japan

**O14-4 Reversible effect of sugar metabolism impaired by NaF on cellular senescence and hypertrophy-like changes in chondrocytes**

○ Yurika Nagao<sup>1)2)</sup>, Satoshi Kubota<sup>1)</sup>, Takashi Nishida<sup>1)</sup>

1) Department of Biochemistry and Molecular Dentistry, Okayama, Japan, 2) Department of Oral and Maxillofacial Reconstructive Surgery, Okayama, Japan

**O14-5 Super-Enhancer-Mediated Regulation of KIF12 in Human Chondrogenesis**

○ Takafumi Aritomi<sup>1)2)</sup>, Kaoru Yamagata<sup>1)</sup>, Yoshiya Tanaka<sup>1)3)</sup>, Shingo Nakayamada<sup>1)</sup>

1) First Department of Internal Medicine, School of Medicine, University of Occupational and Environmental Health, Japan, 2) Department of Laboratory and Transfusion Medicine, Hospital of the University of Occupational and Environmental Health, Japan, 3) Department of Molecular Targeted Therapeutics, School of Medicine, University of Occupational and Environmental Health, Japan

**Oral Presentation 15 14:35-15:15**

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Chairs : Satoshi Kubota (Okayama University)  
Shinsuke Ohba (The University of Osaka)

**Cartilage and Miscellaneous**

**O15-1 Hif-2a is expressed in chondrocytes and contributes to the homeostasis of articular cartilage**

○ Akihiro Uchio, Yasuhide Iwanaga, Asuka Terashima, Yasunori Omata, Sakae Tanaka, Taku Saito  
Department of Orthopaedic Surgery, University of Tokyo, Tokyo, Japan

**O15-2 CCN2 regulates the signaling and function of GDF5 via the binding with GDF5 and BMPR1a and 2**

○ Eriko Aoyama<sup>1)</sup>, Satoshi Kubota<sup>3)</sup>, Toshifuni Ozaki<sup>2)</sup>, Masaharu Takigawa<sup>1)</sup>

1) ARCOCS, Okayama University, Faculty of Medicine, Dentistry and Pharmaceutical Sciences, Okayama University, Faculty of Medicine, Dentistry and Pharmaceutical Sciences, 2) Department of Orthopaedic Surgery, Okayama University, Faculty of Medicine, Dentistry and Pharmaceutical Sciences, 3) Department of Biochemistry and Molecular Dentistry, Okayama University, Faculty of Medicine, Dentistry and Pharmaceutical Sciences

**O15-3 Critical Requirement of Growth Inhibition in CCN3+CD44+ Chondrocyte Stem Cells for Osteoarthritis Progression**

○ Takako Hattori<sup>1)</sup>, Habumugisha Janvier<sup>1)2)</sup>, Ryuichiro Okuda<sup>1)3)</sup>, Miho Kuwahara<sup>1)</sup>, Kazuki Hirose<sup>1)3)</sup>, Hiroshi Kamioka<sup>2)</sup>, Satoshi Kubota<sup>1)</sup>

1) Department of Biochemistry & Molecular Dentistry, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan, 2) Department of Orthodontics, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan, 3) Department of Orthopaedic Surgery, Okayama University Graduate School of Medicine, Dentistry and Pharmaceutical Sciences, Okayama, Japan

**O15-4 Does Brain Asymmetry Shape Frontal Bone Morphology? Micro-CT-based Analysis of the Intracranial Vault Volume Beneath the Mouse Frontal Bone**

○ Shinju Usami<sup>1)2)</sup>, Shinobu Noji<sup>1)</sup>, Yukiko Kuroda<sup>1)</sup>, Katsuhiko Kawaai<sup>1)</sup>, Koichi Matsuo<sup>1)3)</sup>

1) Laboratory of Cell and Tissue Biology, Keio University School of Medicine, Tokyo, Japan, 2) Kawasaki Municipal Ida Hospital, Kanagawa, Japan, 3) CIEM, Kanagawa, Japan

Oral Presentation 16 8:30-9:30

Chairs : Masataka Asagiri (Department of Pharmacology, Graduate School of Medicine, Yamaguchi University)  
Hiroshi Kaji (Department of Physiology and Regenerative Medicine, Kindai University Faculty of Medicine)

Stem Cells and Tissue Regeneration ②

- O16-1** LepR<sup>+</sup> stromal cells serve as primary regulators of osteoclastogenesis during early skeletal development  
○ Karishma Desai, Takashi Nakamura, Toshihide Mizoguchi  
Tokyo Dental college, Oral Health Science Centre, Japan
- O16-2** Estrogen receptor alpha deletion in Cxcl12-abundant reticular cells (CAR cells) causes bone loss and bone marrow adiposity  
○ Aoi Ikedo<sup>1)2)</sup>, Ji-Won Lee<sup>1)</sup>, Yuuki Imai<sup>2)</sup>  
1) Department of Biochemistry, Graduate School of Dental Medicine, Hokkaido University, Hokkaido, Japan,  
2) Division of Integrative Pathophysiology, Proteo-Science Center, PIAS, Ehime University, Toon, Japan
- O16-3** Bone-Collared Cartilaginous Constructs Generated by Combined Chondrogenic and Osteogenic Induction Promote Endochondral Bone Regeneration  
○ Shin Morimoto<sup>1)2)</sup>, Tetsuya Yoshimoto<sup>1)2)</sup>, Hana Ueki<sup>3)</sup>, Mai Yoshino<sup>1)2)</sup>, Masayuki Suzuki<sup>1)2)</sup>,  
Gakuto Yasuda<sup>1)2)</sup>, Tomoaki Shintani<sup>2)</sup>, Mikihiro Kajiya<sup>1)2)</sup>  
1) Innovation & Precision Dentistry, Hiroshima University, Hiroshima, Japan, 2) Center for Oral Clinical Examination, Hiroshima University Hospital, Hiroshima, Japan, 3) School of Dentistry, Hiroshima University, Hiroshima, Japan
- O16-4** Blood vessels initiate bone repair by optimizing periosteal mesenchymal divergence  
○ Toshiyuki Ogata<sup>1)2)</sup>, Takahito Iga<sup>1)2)</sup>, Yuki Matsumoto<sup>1)</sup>, Hideki Kise<sup>1)</sup>, Masaya Nakamura<sup>1)</sup>  
1) Department of Orthopedic Surgery, Keio University School of Medicine, Tokyo, Japan, 2) Department of Anatomy, Keio University School of Medicine, Tokyo, Japan
- O16-5** Comparison of Osteogenic Potential and Related Metabolic Pathways between Dental Pulp Stem Cells and Buccal Fat Pad Stem Cells Derived from the Same Patients  
○ Moe Ishikawa, Yurika Kawasaki, Eito Ueda, Yasuyuki Fujii, Yoko Koga  
Department of Oral and Maxillofacial Surgery, School of Medicine, Tokyo Women's Medical University, Tokyo, Japan
- O16-6** Generation of an Osteochondral Construct Using iPSC-Derived Cartilage Tissue and Artificial Bone  
○ Akihiko Ezaki<sup>1)2)</sup>, Noriyuki Tsumaki<sup>1)</sup>  
1) Laboratory of Tissue Biochemistry, Graduate School of Frontier Biosciences, Osaka University, 2) Orthopaedic Surgery, Osaka University Graduate School of Medicine

## Oral Presentation 17 9:35-10:25

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Chairs : Chisa Shukunami (Hiroshima University)

Takahito Iga (Department of Orthopedic Surgery, Keio University School of Medicine)

### Muscles, Tendons, and Ligaments ②

#### O17-1 Elucidation of the function of Collagen XII in tendon regeneration

○ Kei Fujihara, Yayoi Izu

Graduate School of Veterinary and Life Science, Nippon Veterinary and Life Science University

#### O17-2 Mechanisms Regulating Homeostasis in Response to Mechanical Loading in Enthesopathy

○ Yuri Furukawa<sup>1</sup>, Yasuhide Iwanaga<sup>2</sup>, Asuka Terashima<sup>3</sup>, Sakae Tanaka<sup>1</sup>, Yasunori Omata<sup>3</sup>, Taku Saito<sup>1</sup>

1) Department of Orthopaedic Surgery, Graduate School of Medicine, The University of Tokyo, 2) Graduate School of Engineering, The University of Tokyo, 3) Department of Bone & Cartilage Regenerative Medicine, The University of Tokyo Hospital

#### O17-3 Spatiotemporal regulation of limb tendon and bone eminence formation by an evolutionarily conserved *Scleraxis* enhancer

○ Shinsei Yambe, Chisa Shukunami

Department of Molecular Biology and Biochemistry, Graduate School of Biomedical & Health Sciences, Hiroshima University, Hiroshima, Japan

#### O17-4 Cellular senescence at the greater tuberosity enthesis is associated with bone loss in a rat modified rotator cuff tear arthropathy (mCTA) model

○ Kento Shimanoe<sup>1</sup>, Takayuki Ide<sup>1,2</sup>, Tomohiro Iuchi<sup>1,3</sup>, Kouhei Uekama<sup>1,4</sup>, Toshirou Ijuin<sup>1</sup>, Shingo Maeda<sup>4</sup>, Noboru Taniguchi<sup>1,2,3,4</sup>

1) Department of Orthopedic Surgery, Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima, Japan, 2) Department of Musculoskeletal Regenerative Medicine, Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima, Japan, 3) Department of Joint Prosthesis Development, Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima, Japan, 4) Department of Bone and Joint Medicine, Kagoshima University Graduate School of Medical and Dental Sciences, Kagoshima, Japan

#### O17-5 Effects of Vector Potential Stimulation on Myogenic Differentiation, Structural Maturation, and Metabolic Activity in C2C12 Cells

○ Hiroaki Takada, Yumi Matsuoka, Ryoichi Nagatomi

Designing Future Health Initiative (DFHI), Tohoku University, Sendai, Japan

## Oral Presentation 18 10:30-11:30

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Chairs : Noriko Yoshimura (Department of Preventive Medicine for Locomotive Organ Disorders 22nd Century Medical and Research Center The University of Tokyo)

Masakazu Notsu (Shimane University Faculty of Medicine, Internal medicine 1)

### Osteoporosis and Sarcopenia

#### O18-1 Association Between Toe Grasp Strength, Body Composition, and Calcaneal Bone Status in Young Adults

○ Toshifumi Fujiwara, Yasuharu Nakashima

The Department of Orthopaedic Surgery, Kyushu University Hospital, Japan

- O18-2 Association Between Muscle Weakness and Multimorbidity: A Comparative Study of Japanese and UK Cohorts**  
 ○ Noriko Yoshimura<sup>1</sup>, Toshiko Iidaka<sup>1</sup>, Sakae Tanaka<sup>2</sup>  
 1) Department of Preventive Medicine for Locomotive Organ Disorders, 22nd Century Medical and Research Center, The University of Tokyo, 2) Department of Orthopaedic Surgery, Faculty of Medicine, The University of Tokyo
- O18-3 Effect of Pre-Injury Osteoporosis Medication on the Fracture Pattern of Femoral Trochanteric Fractures: A Three-Dimensional CT Based Imaging Analysis**  
 ○ Masashi Shimamura  
 Department of Orthopaedic Surgery, Shikoku Medical Center for Children and Adults
- O18-4 Comparative Effectiveness of Osteoporosis Medications for Preoperative Management in Orthopaedic Implant Surgery: A Real-World Five-Drug Analysis**  
 ○ Motohiro Haseyama<sup>1</sup>, Ayako Tominaga<sup>1</sup>, Keiji Wada<sup>2</sup>, Jun Sugaya<sup>1</sup>, You Takase<sup>1</sup>  
 1) Dept. of Orthop. Surg., Tokyo Women's Medical University, Tokyo, Japan, 2) Spine Center, Tomei Atsugi Hospital
- O18-5 Long-term bone mineral density outcomes after sequential therapy from romosozumab to denosumab**  
 ○ Ayako Tominaga<sup>1</sup>, Keiji Wada<sup>2</sup>, Jun Sugaya<sup>1</sup>, Arisa Yoshida<sup>1</sup>, Motohiro Haseyama<sup>1</sup>  
 1) Dept. of Orthop. Surg., Tokyo Women's Medical University, Tokyo, Japan, 2) Spine Center, Tomei Atsugi Hospital
- O18-6 Effectiveness of switching from once-daily teriparatide to twice-weekly teriparatide: a study of a novel treatment strategy first defined as teriparatide-switch therapy**  
 ○ Kazuaki Mineta<sup>1</sup>, Toshihiko Nishisho<sup>2</sup>  
 1) The Orthopedic Department, Tokushima Kensei Hospital, Tokushima, Japan, 2) The Orthopedic Department, University of Tokushima, Tokushima, Japan

## Oral Presentation 19 11:35-12:15

Chairs : Masamichi Takami (Showa Medical University)

Ryotaro Iwasaki (Department of Dentistry and Oral Surgery Keio University, School of Medicine)

### Teeth and Jawbones

- O19-1 Role of Cxcl12-Expressing Cells in Tooth Formation and Maintenance**  
 ○ Takumi Shibahara<sup>1</sup>, Katsutoshi Hirose<sup>1</sup>, Makoto Abe<sup>2</sup>, Yu Usami<sup>1</sup>, Shinsuke Ohba<sup>2</sup>, Satoru Toyosawa<sup>1</sup>  
 1) Dept. of Oral and Maxillofacial Pathology, Grad. Sch. of Dent., The University of Osaka, 2) Dept. of Tissue and Developmental Biology, Grad. Sch. of Dent., The University of Osaka
- O19-2 Annexin A5 inhibits cementum mineralization**  
 ○ Hisashi Ideno, Kazuhisa Nakashima, Akira Nifuji  
 Tsurumi University School of Dental Medicine
- O19-3 L-BAIBA prevents periodontitis-induced bone resorption through inhibition of excessive RANKL expression in osteocytes**  
 ○ Eijiro Sakamoto<sup>1</sup>, Yuki Matsushita<sup>2</sup>  
 1) Periodontics and Endodontics, Nagasaki University Hospital, Nagasaki, Japan, 2) Department of Skeletal Development and Regenerative Biology, Nagasaki University

**O19-4 Persistence of micro-sequestra in the oral mucosa of tooth extraction sockets in zoledronate-treated mice**

○ Gaku Koizumi, Kasumi Shimizu, Taku Murata, Naoya Arai

Department of Oral and Maxillofacial Surgery Mie University Graduate School of Medicine

**Luncheon Seminar 10 12:35-13:35**

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Chair : Akinori Sakai (Orthopaedic Surgery, University of Occupational and Environmental Health)

**LS10 Elucidating Diverse Fracture Risks and Personalized Treatment Based on Animal and Human Research**

○ Mitsuru Saito

Department of Orthopaedic Surgery, Jikei University School of Medicine

Co-sponsored by : Taisho Pharmaceutical Co., Ltd

**Oral Presentation 20 13:45-14:45**

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Chairs : Hiroyuki Inose (Department of Orthopedics, Dokkyo Medical University School of Medicine)

Atsushi Suzuki (Department of Endocrinology, Diabetes and Metabolism, Fujita Health University)

**Primary Osteoporosis**

**O20-1 Post-spinal surgery treatment with romosozumab increases CT Hounsfield values predominantly in cortical bone rather than vertebral cancellous bone**

○ Keiji Wada<sup>1</sup>, Ayako Tominaga<sup>2</sup>, Munehiro Naruo<sup>1</sup>

1) The Department of Orthopedics, Spine Center, Tomei Atsugi Hospital, 2) The Department of Orthopedics, Tokyo Women's Medical Hospital

**O20-2 Relationship between Femoral BMD and Femoral HU Value (Hip-HU) in Patients with Proximal Femoral Fractures**

○ Naoko Noguchi

SUMITOMO HOSPITAL, Osaka, Japan

**O20-3 Evaluation of a Simplified Phantomless Calibration Method for Vertebral Hounsfield Unit Measurements on CT in Patients with Rheumatoid Arthritis**

○ Koichi Murata<sup>1</sup>, Hiroki Nishimura<sup>2</sup>, Shuichi Matsuda<sup>2</sup>

1) Department of Advanced Medicine for Rheumatic Diseases, Kyoto University Graduate School of Medicine, 2) Department of Orthopaedic Surgery, Kyoto University Graduate School of Medicine

**O20-4 Suppression of Cortical Porosity by Biocompatible Polymer-Coated Titanium Implants Based on the Intermediate Water Concept: A micro-CT Analysis**

○ Taku Ikegami<sup>1</sup>, Chikara Ushiku<sup>1</sup>, Kazuhito Morioka<sup>2</sup>, Mitsuru Saito<sup>1</sup>

1) Department of Orthopaedic Surgery, The Jikei University School of Medicine, 2) Orthopaedic Trauma Institute, Department of Orthopaedic Surgery, University of California, San Francisco (UCSF)

**O20-5 Does exposure to dioxins affect bone density? Longitudinal assessment of bone density in Kanemi oil poisoning patients and evaluation of the effects of benzo[a]pyrene on bone formation and resorption**

○ Shotaro Kawamura, Toshifumi Fujiwara, Keitaro Yasumoto, Toshiaki Sugita, Yasuharu Nakashima

The Department of Orthopaedic, Kyushu University, Fukuoka, Japan

**O20-6 High-Molecular-Weight Hyaluronic Acid Prevents Ovariectomy-Induced Immune Cell Proliferation and Bone Loss in the Distal Femur**

○ Zhiheng Gui<sup>1)</sup>, Kunikazu Tsuji<sup>1) 2)</sup>

1) Department of Orthopaedic Surgery, Institute of Science Tokyo, Tokyo, Japan, 2) Department of Bone and Joint Disorders, Institute of Science Tokyo, Tokyo, Japan