

## Invited Speaker Biographical Information

### **ROLAND BARON**

Dr. Roland Baron received his training at the University of Paris, France, where he was awarded his DDS and then his PhD in oral biology. In 1975, Dr. Baron began a long career at Yale University School of Medicine. In 2008, he left Yale to become the chair of the Department of Oral Medicine, Infection, and Immunity at Harvard School of Dental Medicine. In addition to being chair, Dr. Baron is also a professor of oral medicine, infection, and immunity and a professor of internal medicine at Harvard Medical School and at the Endocrine Unit at Massachusetts General Hospital. Dr. Baron is the founder and current editor-in-chief of *Bone*, the Official Journal of the International Bone and Mineral Society. Dr. Baron has published more than 250 scientific papers in the field of bone cell and molecular biology. He has also received numerous awards during his career, including the Thesis Prize, Silver Medal, Laureate of Paris V University for the PhD Thesis in 1972; MERIT Award, National Institutes of Health, NIDR, NIH, in 1993; Seymour J. Kreshover Lecture Award, NIDR, NIH, in 1997; Japan Society for the Promotion of Science travel grant in 2002; Louis V. Avioli Founders Award, American Society for Bone and Mineral Research, in 2002; Doctor Honoris Causa, University René Descartes, Paris, France, also in 2002; and D. Harold Copp Award in Basic Research, International Bone and Mineral Society, Geneva, Switzerland, in 2005. He was a member of the Council of the American Society for Bone and Mineral Research from 1991 to 1994 and has been a member of the Board of Directors of the International Bone and Mineral Society since 1995. Dr. Baron was elected president of the European Calcified Tissue Society in 2007.

### **HENRY BONE**

Henry Bone, MD, FACP, FACE, CCD is an endocrinologist whose activities are focused on bone and mineral disorders. He is the Director of the Michigan Bone & Mineral Clinic and head of Endocrinology and Metabolism at St. John Hospital and Medical Center in Detroit, as well as Adjunct Professor, University of Michigan School of Medicine.

### **LYNDA BONEWALD**

Lynda F. Bonewald, PhD Interim Vice Chancellor for Translational and Clinical Research Curators Professor Lee M and William L. Lefkowitz/Missouri Endowed Professorship Director, Bone Biology Research Program Director, UMKC Center of Excellence in Dental and Musculoskeletal Tissues University of Missouri at Kansas City Dr. Bonewald serves as the Director of the Bone Biology Research Program at the UMKC School of Dentistry Oral Biology and Director of the UMKC Center in the Study of Mineralized Tissues. She

also serves as Vice Chancellor for Translational and Clinical Research. She is the recipient of the Distinguished Scientist award in the area of mineralized tissue from AADR/IADR and the Remodeling in Bone Award from the Sun Valley Workshop. She was program co-organizer for ASBMR 2009, served as ASBMR Secretary/Treasurer and is now ASBMR president. She currently serves on NIH NIAMS Council. Dr. Bonewald's research focuses on osteocyte biology, mechanotransduction, and crosstalk with other tissues, specifically muscle.

### **ROBERT COLEMAN**

Professor Robert Coleman, MD, FRCP, FRCPE is the Yorkshire Cancer Research Professor of Medical Oncology. He graduated from Kings College Hospital Medical School and trained in London and Edinburgh before becoming senior lecturer and honorary consultant in the Academic Unit of Clinical Oncology at Weston Park Hospital in 1991. He now leads a large clinical research team and is Director of the Sheffield Gestational Trophoblastic Diseases Treatment Centre. He is an Associate Director of the National Cancer Research Network (NCRN) and Lead for the new CR-UK / YCR Sheffield Cancer Centre. He was a Past-President of the Cancer and Bone Society (2005-08). Over the years, he has developed a highly successful cancer clinical trials facility, which has both led and participated in a broad range of clinical trials. These have ranged from early phase drug development studies to large phase III randomised trials. Research interests include cancer-induced bone disease and developments in the management of breast cancer. He has authored or co-authored more than 350 publications of original research and is on the editorial board of several oncology journals.

### **JULIET COMPSTON**

Juliet Compston is Emeritus Professor of Bone Medicine at the University of Cambridge School of Clinical Medicine, a position she took up in 2003. Her research is focused on the pathophysiology of osteoporosis and the cellular and structural mechanisms by which pharmacological interventions preserve bone mass and reduce fracture risk. She has conducted studies into the pathophysiology of bone disease in a number of disorders, including postmenopausal osteoporosis, post-transplantation osteoporosis and cystic fibrosis. Recently her research has focused on fractures in obese postmenopausal women. Professor Compston is a past President of the Bone and Tooth Society of Great Britain, as well as a past Chairman and President of the International Society of Bone Morphometry. She takes up the post of Editor-in-Chief of the *Journal of Bone and Mineral Research* in January 2013 and is a member of Council of the American Society of Bone

and Mineral Research. She is Chair of the European Union Osteoporosis Consultation Panel and of the UK National Osteoporosis Guidelines Group. She has published over 350 original research papers and reviews. In 2006, Professor Compston was awarded the National Osteoporosis Society Kohn Foundation Award, and in 2009, the International Bone and Mineral Society John G Haddad Jr Award and the ASBMR Frederic C Barter Award.

#### JANINE DANKS

Her primary interest over the last 25 years has been the presence and functions of calcium regulating hormones, particularly the parathyroid hormone family (PTH) including parathyroid hormone-related protein (PTHrP) in normal and tumor tissues. She pioneered the immunohistochemical method for the localization of PTHrP. This paper, was selected by JBMR in 2003 as one of the 21 most important papers published in its first 25 years. Her laboratory went on to demonstrate the important role of PTHrP in breast tumors and its metastatic predilection for bone. She has also localized PTHrP in a number of species, including sharks, amphibians and lampreys. Her work has demonstrated that PTHrP has conserved sites of localization in a range of vertebrates, including skin, kidney and the skeletal elements regardless of whether they consist of bone or cartilage. She has gone on to isolate and clone the elephant shark (*Callorhynchus millii*) Pthrp and two Pth genes (Pth1, Pth2) and localize the three proteins in elephant shark tissues. These findings suggest that PTHrP and PTH have basic and fundamental roles in all vertebrates.

#### RICHARD EASTELL

Richard Eastell, BSc (Hons), MBChB, MD (Edin), FRCP, FRCPI (Hon), FRCPath, FMedSci, is Professor of Bone Metabolism at the University of Sheffield and Honorary Consultant Physician in Metabolic Bone Disease at the Northern General Hospital in Sheffield, England, United Kingdom, where he is also Head of the Academic Unit of the Bone Metabolism Group and Director of the Mellanby Centre for Bone Research. Professor Eastell qualified in medicine from Edinburgh in 1977 and trained at the Mayo Clinic under B.L. Riggs for 5 years. Professor Eastell has an active research group focusing on the pathophysiology, diagnosis, and treatment of osteoporosis, and he has published more than 300 papers on osteoporosis and related topics. He is on the editorial boards of Osteoporosis International and Osteoporosis Review and is an Associate Editor of Bone. He is Past President of the European Calcified Tissue Society and Past Chairman of the National Osteoporosis Society. Professor Eastell has received a number of awards for his work, including the Corrigan Medal of the Royal College of Physicians of Ireland in 1998. In 2002, he was part of the University of Sheffield team awarded the Queen's Anniversary Prize for the Health and Social Care of Older People. In 2004, Professor Eastell was awarded the Kohn Foundation Award from the National Osteoporosis Society and the Society of Endocrinology Medal. His work has recently been recognised by the Ian MacIntyre Award 2011 (Harvey Institute, London) and the Philippe Bordier Award 2012 (European Calcified Tissue Society).

#### PAUL FRENETTE

Paul Frenette is Director and Chair of the Ruth L. and David S. Gottesman Institute for Stem Cell and Regenerative Medicine Research at Albert Einstein College of Medicine in New York. His research interests have focused on the stem cell microenvironment in normal hematopoiesis and cancer. His laboratory has uncovered the critical role of the sympathetic nervous system in the regulation of hematopoietic stem cell egress from their niches, and elucidated circadian rhythmicity in stem cell release. His research group has recently identified Nestin+ mesenchymal stem cell as the target cell for neural signals and a novel HSC niche candidate in the bone marrow. Dr. Frenette received a medical degree from Université Laval in Quebec City followed residency training at McGill University in Montreal, and completed a clinical fellowship in Hematology-Oncology at Tufts' New England Medical Center in Boston. He trained as postdoctoral fellow in the laboratories of Drs. Denisa Wagner (Harvard Medical School) and Richard Hynes (MIT) and then was on the faculty at Mount Sinai School of Medicine in New York from 1998-2010. Dr. Frenette is an elected member of the American Society for Clinical Investigation (2004) and the Association of American Physicians (2010). He served on the editorial boards of Blood and JCI, the Medical Advisory Board of the New York Stem Cell Foundation, as chair of a scientific committee of the American Society of Hematology, and on multiple other panels at the NIH. He was recently elected Vice-President of the International Society of Experimental Hematology (ISEH) and will become president of ISEH in 2015.

#### SEIJI FUKUMOTO

Dr. Fukumoto is a Lecturer of the Division of Nephrology and Endocrinology, Department of Internal Medicine at the University of Tokyo Hospital. He received his MD degree in 1982 and PhD degree in 1990 from the University of Tokyo. After receiving his PhD degree, he spent a couple years in the laboratory headed by Professor T.J. Martin in Melbourne. His areas of interest include homeostatic control and derangements of mineral metabolism, and pathogenesis and treatment of metabolic bone diseases. He has contributed to the cloning of FGF23, the development of assay for FGF23 and the clarification of mechanisms of actions of FGF23. He is now involved in the clinical, educational and research works at the University of Tokyo.

#### HIROSHI HAGINO

Dr. Hagino is Professor and head of the Rehabilitation Division and School of Health Science at Tottori University Faculty of Medicine in Yonago, Tottori, Japan. In 1982, he joined the Japanese National Board of Medicine followed by membership on the Japanese Board of Orthopedic Surgery in 1989 and the Japanese Board of Rehabilitation Medicine in 2002. He is a member of the Japanese Orthopedic Association, the Japanese Association of Rehabilitation Medicine, the Japanese Society for Bone and Mineral Research, and the American Society for Bone and Mineral Research. He is also on the board of the Asia-Pacific Region Regional Advisory Council of the International Osteoporosis Foundation.

**SHINJI HIYAMA**

Dr. Hiyama received a PhD from Niigata University in 2009. From 1999 to today, he is Assistant Professor in the Department of Oral Biology at Hiroshima University Institute of Biomedical & Health Sciences.

**HUA ZHU (DAVID) KE**

David Ke's primary research interests include bone biology, osteoporosis, and orthopedic-related research. He has been a bone researcher since his post-doctoral training at the University of Utah. He joined Pfizer Global Research and Development in 1992, and worked there until 2005 when he joined the Amgen bone research group. He is currently a Scientific Executive Director at Amgen (Thousand Oaks, California, USA). In addition, he is an adjunct professor at the University of Utah School of Medicine (Salt Lake City, Utah, USA). He has authored or co-authored more than 100 scientific publications that have been published in peer-reviewed scientific journals. He and his group have delivered more than 200 scientific presentations at national and international scientific conferences.

**SUNDEEP KHOSLA**

Dr. Sundeep Khosla is the Dr. Francis Chucker and Nathan Landow Research Professor of Medicine and Physiology, Mayo Foundation Distinguished Investigator, and Associate Director for Research at the College of Medicine, Mayo Clinic. Dr. Khosla received his BA degree from Harvard College and his MD from Harvard Medical School. He was subsequently a resident in Internal Medicine and a fellow in Endocrinology at the Massachusetts General Hospital. In 1988 he moved to Mayo Clinic, where his research interests include mechanisms of postmenopausal and age-related bone loss, sex steroid regulation of bone metabolism, and osteoblast/stem cell biology. Dr. Khosla has served as Chair of the NIH SBDD Study Section, on the Council of the National Institute on Aging, and as President of the American Society for Bone and Mineral Research. He has received numerous awards and honors for his work, including the Frederic C. Bartter Award for Clinical Investigation and the William F. Neuman Award for Outstanding Scientific Contributions from the American Society for Bone and Mineral Research, the Clinical Investigator Award and Lecture from the Endocrine Society, and election to the ASCI and AAP. Dr. Khosla has also served as Associate Editor of the Journal of Bone and Mineral Research and as a member of the editorial boards for the Journal of Clinical Investigation, Journal of Bone and Mineral Research, Journal of Clinical Endocrinology and Metabolism, Bone, and Endocrine Reviews.

**CHRISTOPHER KOVACS**

Dr. Christopher Kovacs is a Professor of Medicine (Endocrinology and Metabolism), Obstetrics & Gynecology, and BioMedical Sciences at Memorial University of Newfoundland. Born in Toronto, he obtained his MD and Internal Medicine fellowship at Queen's University in Kingston (Canada), a clinical fellowship in Endocrinology and Metabolism at the University of Alberta in Edmonton (Canada), and a postdoctoral fellowship in bone and mineral metabolism at Harvard Medical

School and Massachusetts General Hospital. His clinical practice focuses on osteoporosis and endocrinology while his basic research examines calcium and bone metabolism during the reproductive periods (pregnancy, lactation, and fetal development). Among a dozen national and international awards for research excellence, he received the Gold Medal in Medicine from the Royal College of Physicians and Surgeons of Canada and Young Investigator Awards from ASBMR, AIMM, and CSEM. He serves on Editorial Boards of JBMR and Endocrinology, and on CIHR and NIH grant committees. He was on the Institute of Medicine Committee to Review Calcium and Vitamin D which released its report in November 2010. He is also a professional artist and has painted fine art on commission for more than 20 years. Notably, his 'Green Gables House' painting was issued as stamps and first day covers by both Canada Post and Japan Post in June 2008.

**REGIS J. O'KEEFE**

Regis J. O'Keefe, MD, PhD, is the Marjorie Strong Wehle Professor and Chair, Department of Orthopaedics and Rehabilitation, at the University of Rochester School of Medicine and Dentistry in Rochester, New York. Dr. O'Keefe is also the Director of the Center for Musculoskeletal Research at the University of Rochester. He is the Associate Dean of Clinical Affairs at the University of Rochester School of Medicine and Dentistry. Dr. O'Keefe earned his Bachelor of Arts degree in philosophy and religious studies and graduated magna cum laude from Yale University in New Haven, Connecticut. After earning his medical degree from Harvard Medical School in Boston, Massachusetts, he completed a PhD in biochemistry and biophysics from the University of Rochester School of Medicine and Dentistry. Dr. O'Keefe served his internship in surgery at New England Deaconess Hospital in Boston, his residency in orthopaedics at the University of Rochester Medical Center and completed an oncology fellowship at Massachusetts General Hospital. In 1993, he joined the faculty at the University of Rochester. Dr. O'Keefe has authored or coauthored over 230 articles, more than 300 abstracts, and 14 book chapters and reviews concerning bone repair and development, cancer, inflammatory diseases of bone, genetics, and related topics. Most of his research has been supported by NIH grants, and his NIH funding has consistently placed him among the most highly funded orthopaedic surgeon-clinician scientists in the United States. Dr. O'Keefe is an Associate Editor of the Journal of Bone and Mineral Research. He has served in numerous leadership roles in national orthopaedic organizations. Dr. O'Keefe is a member of the Board of Directors of the American Board of Orthopaedic Surgery (ABOS). He served for more than 6 years as a member of the Orthopaedic Research and Education Foundation, including service in the role of Secretary of that organization. Dr. O'Keefe is a past president of the Orthopaedic Research Society (ORS). He also served the ORS as Treasurer and as a member of the Program Committee. He is the past president of the United States Bone and Joint Decade, an international coalition of health care organizations aimed at decreasing the incidence of bone and joint disorders. Dr. O'Keefe is also the past Chair of the Skeletal Biology and Skeletal Regeneration Study Section for the NIH's Center for Scientific Review. Dr. O'Keefe is currently serving on the Advisory Council of the

NIH National Arthritis and Musculoskeletal and Skin Diseases (NIAMS). He represents NIAMS on the NIH Council of Councils (COC) Advisory Council that reviews trans-NIH initiatives. Dr. O'Keefe has served as the Chair of the American Academy of Orthopaedic Surgeons' Clinician Scientist Committee. He also has directed the Orthopaedic Research and Education Foundation's Grant Writing Workshop, a program that mentors young scientists in the critical skill of grant writing. He is a member of the American Association of Physicians (AAP).

#### **TOSHIO MATSUMOTO**

Toshio Matsumoto, M.D. is professor and chair at the Department of Medicine and Bioregulatory Sciences, The University of Tokushima Graduate School of Medical Sciences, Tokushima, Japan. He graduated from the University of Tokyo School of Medicine in 1974. After finishing residency program in internal medicine and starting his research career, he was trained as a postdoctoral research associate at the Yale University School of Medicine from 1978 to 1981. He has served as a Councillor of the ASBMR (2000-2002), a Board member of the IBMS (1995-2005), JSBMR (2005-present), Japan Endocrine Society (2003-present), and an Advisory Committee member of the Cancer-Associated Bone Society (2005-present). His major scientific interests are: regulation of osteoblast differentiation, pathophysiology and treatment of cancer-induced bone diseases, and translational research and clinical development of drugs for osteoporosis treatment.

#### **DANIEL METZGER**

Daniel Metzger (France) PhD: University Louis Pasteur, Strasbourg (CIFRE fellowship) Professional experience: 1992-1995: Postdoctoral position at Laboratoire de Génétique Moléculaire des Eucaryotes, Strasbourg, France. 1995-1999: Research associate at Centre National de la Recherche Scientifique (CNRS; Chargé de Recherche), Institut de Génétique et de Biologie Moléculaire et Cellulaire (IGBMC), CNRS/INSERM/Collège de France, Illkirch, France 2000 - 2009: Research Director (DR2) at CNRS, Team Leader at IGBMC. 2010 -: Research Director (DR1) at CNRS, Team Leader at IGBMC. Research and administration responsibilities 2002-2004: Coordinator of the IGBMC department 'Physiological Genetics of Nuclear Signaling' 2003 - 2006: senior advisor at the mouse clinical institute (ICS) 2005 - 2007: Member of the French research agency ANR (Agence Nationale de la recherche) 'Recherche et Innovation en Biotechnologie' 2008-2012: Member of the INSERM scientific committee 'Commission scientifique spécialisée CCS2' 2008 and 2009: Member of the review panel of the french ... (Agence d'Evaluation de la Recherche et de l'Enseignement Supérieur; AERES) Honors 2010: CNRS Silver Medal Awards 1990 Janine Courier award of the French Science Academy. 2007 Jules Martin award of the French Science Academy. Membership 2012 European Academy of Cancer Sciences.

#### **CHI HARU MIYAKAWA**

2013, BSc (Animal Science), Niigata University 2013-present, Graduate Student, Graduate School of Science & Technology, Niigata University.

#### **TOSHITAKA NAKAMURA**

Dr. Nakamura graduated the university of Tokyo, school of medicine in 1973, and had the postgraduate training for orthopedic surgery at the university of Tokyo hospital from 1974. He then moved to Middlemore Hospital, Auckland, New Zealand as an orthopedic registrar from 1980-1981. He had academic appointments as a lecturer of orthopedic surgery, Tokyo University Hospital in 1987-1990, associate professor of orthopedic surgery, University of Occupational and Environmental Health, Japan (UOEH) in 1990-1996, and currently professor and chairman of orthopedic surgery. Current major areas of investigation are osteoporosis and aging in skeletons. He was the executive board member of Japan Orthopedic Association (JOA) in 2006-2008 and was the president of Japan Osteoporosis Society from 2006-2010. He contributed in the nation-wide hip fracture registration project of JOA. He is a member of Committee of National Society of IOF in 2002-2005 and currently is a member of Committee of Scientific Adviser of IOF. He was a member of Editorial Board of JBMR and BONE, and is currently a member Editorial Board of Osteoporosis International.

#### **HIDEMI OKAJIMA**

2012, BSc (Animal Sciences), Niigata University 2012-present, Graduate Student, Graduate School of Science & Technology, Niigata University.

#### **ERIC ORWOLL**

Dr. Orwoll is Professor of Medicine and Attending Physician in the Bone and Mineral Section of the Division of Endocrinology, Diabetes, and Clinical Nutrition. Dr Orwoll's research interest is in the elucidation of pathophysiological mechanisms of metabolic bone disease and the discovery of new therapeutic and diagnostic tools for the clinical care of patients with osteoporosis. His major areas of investigation have been in the area of osteoporosis in men, the role of sex steroids in the regulation of bone metabolism and the genetic determinants of skeletal phenotypes in human populations, and in the investigation of genes that affect bone mass, geometry and material properties in the mouse. He is the principle investigator of several research studies funded by the National Institutes of Health, including the Study of Osteoporotic Fractures in Men (MrOS), and has authored over 300 peer reviewed publications, reviews, books and book chapters. He is also an experienced leader in academic medicine, with extensive responsibility for clinical and translational research planning and management. He is the Associate Vice-President for Research at OHSU, Associate Dean for Clinical Research in the School of Medicine, and the Director of the Oregon Clinical and Translational Research Institute.

#### **THOMAS ROSOL**

Thomas Rosol, DVM, PhD is a professor of veterinary pathology at The Ohio State University, diplomate of the American College of Veterinary Pathologists and senior advisor for technology commercialization in life sciences at OSU. He has served as dean of the College of Veterinary Medicine, vice



president for research, and on advisory boards to the NIH, USDA and American Veterinary Medical Association. Rosol serves as a consultant for industry in preclinical safety in the areas of endocrine, bone, and reproductive pathology and animal models of cancer. The Rosol laboratory investigates the pathogenesis of cancer-associated hypercalcemia, mechanisms and treatment of bone metastasis, animal models of human cancer, and endocrine-responsive cancers. Recent work focuses on prostate, breast, lung and head and neck cancer. The laboratory specializes in mouse and dog imaging using bioluminescence, microCT, high resolution ultrasound, and MRI. Rosol is a fellow of the American Association for the Advancement of Science and was recognized by Ohio State University as a Distinguished Scholar. Curriculum vitae: <http://vet.osu.edu/sites/default/files/documents/pdf/facultyProfiles/rosolT/rosolCV.pdf>

### **EGO SEEMAN**

Ego Seeman is Professor of Medicine and Endocrinologist at the Austin Hospital, University of Melbourne, Melbourne, Australia. He is Past President of the Australian and New Zealand Bone Mineral Society, Board member of the International Osteoporosis Foundation, International Bone Mineral Society and Osteoporosis Australia. Dr. Seeman has been instrumental in organizing many conferences in Australia and Asia and has actively promoted educational exchange in the region through scientific meetings. Among other major meetings, he has convened the third IOF Regional Conference on Osteoporosis in Asia and the University of Melbourne Training Course in Osteoporosis for the past 10 years. Dr. Seeman is the author of some 270 publications and 22 book chapters, and is editor of *Progress in Osteoporosis*, *Clinical Editor of Bone-Key* and Associate Editor of *Osteoporosis International*. He is an Editorial Board member of many other journals in the bone field and has contributed invited editorials and reviews to leading medical journals. He has contributed to studies of the definition, epidemiology, pathogenesis and treatment of osteoporosis in women, men, corticosteroid-related disease, genetics, studies of skeletal growth, racial differences in skeletal structure, role of exercise, and risk factors for osteoporosis, as well as studies of structural diversity in determining bone strength. For his work Dr. Seeman was awarded the 2002 American Society of Bone Mineral Research Fred C. Bartter Award.

### **TOSHIE SUGIYAMA**

Education 1994 PhD (Animal Science) from Niigata University 1994-1995 Research Fellow, Japan Society for the Promotion of Sciences 1995-1997 Assistant Professor, Graduate School of Science & Technology, Niigata University 1997-2010 Assistant Professor, Faculty of Agriculture, Niigata University 2010-present Associate Professor, Faculty of Agriculture, Niigata University Academic Award Prize for Encouragement of Japan Poultry Science Association (2004, Japan).

### **NOBUO SUZUKI**

Nobuo Suzuki is a faculty member at the Noto Marine Laboratory, Kanazawa University.

### **HIROSHI TAKAYANAGI**

Dr. Hiroshi Takayanagi gained his medical degree in 1990 and his Ph.D in 2001 from The University of Tokyo, Japan. By combining experiences as an orthopaedic surgeon and an immunologist, he studied in the mechanism of bone destruction in autoimmune arthritis, which focused on the regulation of osteoclasts by T cells. Furthermore, he has used transcriptomic and mouse genetic approaches to elucidate the molecular pathways that regulate osteoclastogenesis, and has identified NFATc1 as master transcription factor of osteoclastogenesis. He was Professor of Department of Cellular Physiological Chemistry (since 2003 to 2005) and Professor of Department of Cell Signaling (since 2005 to 2012), Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University. Since 2009, He has been the research director of Takayanagi Osteonetwork Project as ERATO Program of Japan Science and Technology Corporation. Since 2012, he has been appointed as a Professor of Department of Immunology, Graduate School of Medicine and Faculty of Medicine, The University of Tokyo. He has been studying the mechanism of bone destruction in autoimmune arthritis, intracellular signal transduction of RANKL in the context of osteoclast differentiation and shared mechanisms of bone and immune systems, which contributed to the development of the new interdisciplinary field of osteoimmunology. His recent studies have identified the molecules mediating the communication among cells in bone. The molecular understanding of the network will provide a novel framework for understanding both the immune and bone systems as well as a molecular basis for developing new strategies against various diseases.

### **NORIYUKI TSUMAKI**

Noriyuki Tsumaki MD, PhD is Professor of Cell Induction and Regulation Field, Center for iPS Cell Research and Application, Kyoto University. He graduated from Osaka University and joined Department of Orthopaedic Surgery in Osaka University in 1989. After obtaining PhD degree in Osaka University, he joined Yoshi Yamada's lab in NIDR, NIH, USA as a visiting fellow in 1996. He returned to the Osaka University as Assistant Professor in 1998. He became Associate Professor at Department of Bone and Cartilage Biology in Osaka University in 2007, and then Professor in Kyoto University in 2011. His research interests lie in the area of cartilage biology with specific interest in the regulation of chondrocyte differentiation and cell reprogramming.

### **SHINYA YAMANAKA**

Dr. Shinya Yamanaka is a Senior Investigator and the L.K. Whittier Foundation Investigator in Stem Cell Biology at the

Gladstone Institutes. At Gladstone, he conducts research at the Roddenberry Stem Cell Center. Dr. Yamanaka is also a Professor of Anatomy at the University of California, San Francisco, as well as the Director of the Center for iPS Cell Research and Application (CiRA) and a Principal Investigator at the Institute for Integrated Cell-Material Sciences, both at Kyoto University. In 2012, Dr. Yamanaka was awarded the Nobel Prize in Physiology or Medicine for his discovery that adult somatic cells can be reprogrammed into pluripotent cells. By introducing the genes for four factors that turn genes on and off, he induced the skin cells of adult mice to become like embryonic stem cells, which he called induced pluripotent stem (iPS) cells. This iPS cell technology represents an entirely new platform for fundamental studies of developmental biology. Rather than using disease models made in yeast, flies, mice or other animals, iPS cells can be taken from patients with a specific disease. As a result, they contain a complete set of the genes that resulted in that disease—representing the potential of an almost perfect disease model for studying disease development, new drugs and treatments. Dr. Yamanaka's current research focuses on ways to generate cells resembling embryonic stem cells by reprogramming

somatic, or skin, cells. He seeks to understand the molecular mechanisms that underlie pluripotency and the rapid proliferation of embryonic stem cells—they can become any type of cell in the body—and to identify the factors that induce reprogramming.

#### **TOSHIYUKI YONEDA**

Dr. Toshiyuki Yoneda, D.D.S., Ph.D. is currently Professor of Division of Hematology and Oncology at Indiana University School of Medicine and Adjunctive and Emeritus Professor of Department of Biochemistry at Osaka University Graduate School of Dentistry. Dr. Yoneda is also the President of the Japanese Society for Bone and Mineral Research (2009-present) and a member of the Science Council of Japan (2005-present). Dr. Yoneda graduated from Osaka University Faculty of Dentistry, receiving D.D.S. in 1972. He obtained Ph.D. in biochemistry at Osaka University Graduate School of Dentistry in 1976. His major interest has been to understand the molecular mechanism of cancer metastasis to bone. Over the last several years, he has been also studying the molecular mechanism of bone pain due to cancer colonization in bone.