

# IBMS Davos Workshops: Bone Biology & Therapeutics

## Program

Sunday March 9, 2008

### Afternoon

#### Session

#### Opening Ceremony

Chairpersons: Ian R. Reid (Auckland, New Zealand); Jane E. Aubin (Toronto, Canada)

- 1700 - 17:10 Welcoming Remarks  
**Ian Reid (Auckland, New Zealand); Jane Aubin (Toronto, Canada)**
- 17:10 - 17:15 Presentation of Gideon & Sevgi Rodan IBMS Fellowship  
**Jane Aubin (Toronto, Canada)**
- 17:15 - 17:30 Tribute to Prof H. Fleisch  
**J. Martin (Melbourne, Australia)**

#### Session

#### Invited Lectures

#### Cell Biology: Recent Advances in Biology

Chairpersons: Ian Reid (Auckland, New Zealand); Jane Aubin (Toronto, Canada)

- 1730 - 1815 Stem Cells, Small RNAs, and Self-Renewal (203)  
**Haifan Lin (New Haven, USA)**
- 1815 - 1900 Hematopoietic Stem Cells and Their Microenvironment  
**Carl Walkley (Melbourne, Australia)**
- 19:00 - 20:00 Welcome Reception
- After Dinner Fireside Chats

**Monday March 10, 2008**

**Morning**

Session **Invited Lectures**  
**Cell Biology**  
Chairpersons: Lawrence Raisz (Farmington, USA); Stefan Mundlos (Berlin, Germany)

0800 - 0845 Delineation of the Regulatory Networks Operating in Skeletogenesis  
**T. Michael Underhill (Vancouver, Canada)**

0845 - 0930 The Role of Osteocytes in Bone and Mineral Metabolism  
**Lynda Bonewald (Kansas City, USA)**

0930 - 1000 Refreshments

0930 - 1030 Poster Viewing - Poster Numbers 1 - 55

Session **Invited Lectures**  
**Cell Biology**  
Chairpersons: Lynda Bonewald (Kansas City, USA); T. Michael Underhill (Vancouver, Canada)

1030 - 1115 Schnurri-3 and Regulation of Bone Formation  
**Laurie Glimcher (Boston, USA)**

1115 - 1200 Paradoxes in Osteoclast Biology  
**Miep Helfrich (Aberdeen, UK)**

**Afternoon**

Session **Invited Lectures**  
**Cell Biology**  
Chairpersons: Masaki Noda (Tokyo, Japan); Stavros Manolagas (Little Rock, USA)

1600 - 1645 Ephrin Signaling in Osteoclast-Osteoblast Cross-talk  
**Koichi Matsuo (Tokyo, Japan)**

1645 - 1730 Regulation of Osteoclastogenesis and Osteoimmunology  
**H. Takayanagi (Tokyo, Japan)**

1730 - 1750 Refreshments

Session **Oral Presentations**  
**Cell Biology: Osteoblasts**  
Chairpersons: Pierre Marie (Paris, France); Serge Ferrari (Geneva, Switzerland)

1750 - 1850 ERK1/2 and Fra-1 Mediate Phosphate-Dependent Stimulation of Matrix Gla Protein Expression in Osteoblasts **(16)**

**Solmaz Khoshniat, Marion Julien, Aline Lacreusette, Martial Masson, Aline Bozec, Erwin Wagner, Pierre Weiss, David Magne, Jerome Guicheux**

TGF2 Beta Protects Osteoblast Apoptosis Induced by Mechanical Unloading by Targeting PI3K/Akt/Bad Signaling In Vivo **(8)**

**Pierre J. Marie, Cecile Dufour, and Xavier Holy**

Regulation of Mitogen-Activated Protein Kinase Phosphatase-1 by PTH/PTHrP Involves cAMP and PKC Pathways in Differentiated Osteoblasts **(18)**

**Nabanita S. Datta, Rola Kolailat, Glenda J. Pettway, Laurie K. McCauley, and Abdul B. Abou-Samra**

Snail, a Transcription Factor, Plays a Crucial Role during Osteogenic Differentiation by Acting as a Direct Repressor of Runx2 **(28)**

**Sung-Kil Lim, Su Jin Park, Jong In Yook, Ji Hyun Byun, Yumie Rhee, Hyun-Mo Ryoo, and Eun Jig Lee**

Lack of Oxytocin Retards Osteoblast Differentiation and Bone Formation (5)

**Graziana Colaianni**, *Roberto Tamma, Adriana Di Benedetto, Claudia Camerino, Giovanni Greco, Nicola Patano, Maurizio Strippoli, Rosaria Vergari, Li Sun, Mone Zaidi, and Alberta Zallone*

Stage-Specific Subsets of Perichondrial Osteoblasts Differentially Relate to Endothelium and Bone and Display Different Destinations in Development (21)

**Christa Maes**, *Tatsuya Kobayashi, Martin K. Selig, Sanford I. Roth, and Henry M. Kronenberg*

Dkk1 Is a Possible Direct Target of Osx (40)

**Chi Zhang** and *Benoit de Crombrughe*

Inactivation of the Integrin-Linked Kinase (ILK) in Osteoblasts Increases Mineralization (9)

**Jad El-Hoss**, *Alice Arabian, Shoukat Dedhar, and René St-Arnaud*

Lactoferrin, a Regulator of Bone – Mechanisms of Action (6)

**Jillian Cornish**, *Dorit Naot, Ashika Chhana, Ian R. Reid*

Cannabinoid Receptor 2 Selective Agonists Stimulate Osteoclast Formation In Vitro but Act as Anabolic Agents In Vivo by Stimulating Bone Formation (34)

**Antonia Sophocleous**, *Euphemie Lando, Rob vant Hof, Aymen I. Idris, and Stuart H. Ralston*

Session	<b>Invited Lecture</b> <b>Cell Biology</b> Chairpersons: Pierre Marie (Paris, France); Serge Ferrari (Geneva, Switzerland)
1850 - 1930	Role of Oxidative Stress in Bone Health and Disease <b>Stavros Manolagas (Little Rock, USA)</b>
After Dinner	Fireside Chats

**Tuesday March 11, 2008**

**Morning**

Session

**Invited Lecture**

**Cell Biology**

Chairpersons: H. Takayanagi (Tokyo, Japan); Jürg Gasser (Basel, Switzerland)

0800 - 0845

Osteogenic-Angiogenic Coupling

**Tom Clemens (Birmingham, USA)**

Session

**Oral Presentations**

**Cell Biology: Osteoclasts**

Chairpersons: H. Takayanagi (Tokyo, Japan); Jürg Gasser (Basel, Switzerland)

0845 - 0915

Id1 Negatively Regulates Osteoclast Differentiation and Maintains Hematopoietic Stem Cell Niche Homeostasis **(43)**

**April S. Chan**, *Kristian K. Jensen, Hannah K. Lederman, Rosandra N. Kaplan, Stefano Rivella, and David C. Lyden*

Sex Steroids Hormone Mediate Osteoprotective Effects by Controlling Osteoclast Life Cycle **(48)**

**Yuuki Imai**, *Takashi Nakamura, Takahiro Matsumoto, Shingo Sato, Shu Takeda, Katsuhide Igarashi, Yoko Yamamoto, Jun Kanno, Hiroshi Takayanagi, Kunio Takaoka, T.J. Martin, Pierre Chambon, and Shigeaki Kato*

TRPV4-Mediated Calcium Influx Regulates Terminal Differentiation of Osteoclasts **(51)**

**Ritsuko Masuyama**, *Thomas Voets, Yuji Karashima, Sofie Torrekens, Karen Moermans, An Vanden Bosch, Roger Bouillon, Bernd Nilius, and Geert Carmeliet*

Zoledronic Acid-Induced IPP/Apppl Formation *In Vivo* and *In Vitro* **(50)**

**Johanna Kuokkanen**, *J.C. Crockett, M.J. Rogers, H. Mönkkönen, S. Auriola, and J. Mönkkönen*

The Matrix Proline/Arginine-Rich End Leucin-Rich Repeat Protein (PRELP) Impairs Osteoclastogenesis by Inhibiting NF-kappaB Activity **(52)**

**Anna Rufo**, *Marina Alamanou, Nadia Rucci, Mattia Capulli, Dick Heinegard, and Anna Teti*

0915 - 1030

Poster Viewing - Poster Numbers 56 - 110

0930 - 1000

Refreshments

Session

**Oral Presentations**

**Cell Biology: Skeletal Metabolism**

Chairpersons: Tom Clemens (Birmingham, USA); Clemens Lowik (Leiden, The Netherlands)

10:30 - 11:20

The Aging Associated Gene *SIRT-1* Controls Bone Mass *In Vivo*

Through Osteoblast and Osteoclast Regulation **(73)**

**James R. Edwards**, *Kayvan Zainabadi, Florent Elefteriou, Frederick Alt, Leonard Guarente, and Gregory R. Mundy*

Endorphins Regulate Bone Homeostasis by Actions through Dynorphin **(60)**

**Paul A. Baldock**, *Iris Wong, Michelle M. McDonald, Ron F. Enriquez, Christoph Schwarzer, David G. Little, Amanda Sainsbury, Herbert Herzog, and John A. Eisman*

Mice Treated with a Myostatin/GDF-8 Decoy Receptor, ActRIIB-Fc, Exhibit a Tremendous Increase in Bone Mass **(66)**

**Peter Bialek**, *Jascha Parkington, Loraine Warner, Michael St. Andre, Li Jian, Donna Gavin, Catherine Wallace, Jimin Zhang, Grace Yan, Adam Root, Howard Seeherman, and Paul Yaworsky*

Effect of a Selective p38alpha Inhibitor on Trabecular Bone Loss Induced by Estrogen Deficiency **(69)**

**Joseph Caverzasio** and *Patrick Ammann*

A Physical Mechanism for Coupling Bone Resorption and Formation in Adult Human Bone (57)  
**Jean-Marie Delaisse**, *Thomas L. Andersen, Teis E. Sondergaard, Katarzyna E. Skorzynska, Torben Plesner, Trine L. Plesner, and Ellen Hauge*

Loss of the Vitamin D Receptor in the Intestine Induces Severe Bone Loss To Preserve Normal Calcemia (91)

**Liesbet Lieben**, *Ritsuko Masuyama, Ingrid Stockmans, Karen Moermans, Roger Bouillon, and Geert Carmeliet*

Osteogenic Differentiation of Marrow Cells in Response to Hedgehog Stimulation In Vivo (78)

**Kris Gellynck**, *Dan Deng, Robert Brown, Wei Liu, and Paul Buxton*

Effects of Global Knockout or Over-Expression of Fibroblast Growth Factor-2 in Osteoblasts on Fracture Healing in Transgenic Mice (107)

**Marja M. Hurley**, *Liping Xiao, Douglas Adams, Liping Wang, and Xi Jiang*

Session	<b>Invited Lecture</b> <b>Cell Biology</b> Chairpersons: Tom Clemens (Birmingham, USA); Clemens Lowik (Leiden, The Netherlands)
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1120 - 1200      Skeletal Regulation of Energy Metabolism  
**Gerard Karsenty (New York, USA)**

#### Afternoon

Session	<b>Invited Lectures</b> <b>Translational</b> Chairpersons: David Little (Sydney, Australia); Gerard Karsenty (New York, USA)
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1600 - 1640      Novel Imaging Techniques in Laboratory Bone Research  
**Michaela Kneissel (Basel, Switzerland)**

1640 - 1720      Advances in the Clinical Imaging of Bone  
**Ralph Müller (Zurich, Switzerland)**

1720 - 1800      Fracture Surrogates in Osteoporosis  
**Mary Bouxsein (Boston, USA)**

1800 - 1820      Refreshments

Session	<b>Invited Lectures</b> <b>Translational</b> Chairpersons: Mary Bouxsein (Boston, USA); Roger Bouillon (Brussels, Belgium)
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1820 - 1900      Biology of Fracture Healing and Effect of Osteoporosis Therapies  
**David Little (Sydney, Australia)**

1900 - 1945      Osteoarthritis and Osteoporosis: A Molecular Basis for an Inverse Relationship  
**Frank Luyten (Leuven, Belgium)**

2200              Social Event at Pöstli Club, Promenade 42, Davos Platz

Wednesday March 12, 2008

Morning

Session

Invited Lectures

Translational: Wnt Pathway

Chairpersons: Gregory Mundy (Nashville, USA); Henry Kronenberg (Boston, USA)

0800 - 0845

Regulation of Wnt Signaling at the Plasma Membrane

**Christof Niehrs (Heidelberg, Germany)**

0845 - 0930

Wnt Signaling in Skeletal Homeostasis: Mechanisms and Therapeutic Implications

**Roland Baron (Boston, USA)**

0930 - 1000

Refreshments

0930 - 1030

Poster Viewing - Poster Numbers 111 - 163

Session

Oral Presentations

Translational

Chairpersons: Roland Baron (Boston, USA); Wim Van Hul (Antwerp, Belgium)

1030 - 1130

PTH-Induced Bone Anabolism Is Blunted in *SOST* Overexpressing Mice **(88)**

**Ina Kramer, Gabriela G. Loots, and Michaela Kneissel**

The High Bone Mass Phenotype of *SOST* Deficient Mice Is Characterized by Progressive Increase in Bone Thickness, Mineralization and Predicted Cortical Bone Strength in a Gene Dosage Unrelated Manner **(89)**

**Ina Kramer and Michaela Kneissel**

Gender-Specific Control of Peak Bone Mass by the Wnt Pathway: Androgen Signaling Protects Against Lef1 Haploinsufficiency-Induced Bone Loss **(75)**

**Yankel Gabet, Tommy Noh, Jon Cogan, Archana Tank, Tomoyo Sasaki, Braiden Criswell, Alexis Dixon, Joseph Tam, Thomas Kohler, Eran Regev, Lisa Kockeritz, James Woodgett, Ralph Müller, Yang Chai, Elisheva Smith, Itai Bab and Baruch Frenkel**

Surprising Lifetime Effects of Deletion of the Mouse Calcitonin Gene **(76)**

**Robert F. Gagel, Ana O. Hoff, Su-chen E. Huang, and Gilbert J. Cote**

Erythropoietin: A Novel DABA? **(100)**

**Nancy Morabito, Agostino Gaudio, Enza Maria Galati, Simona Pergolizzi, Maria Fernanda Taviano, Antonino Lasco, Ilaria Macri, Antonino Catalano, Marco Atteritano, Francesco Occhiuto, Elisa Corrente, Giancarlo Crisafulli and Nicola Frisina**

Differing Effects of Pre and Post-Fracture Bisphosphonate Treatment on Bone Repair in Estrogen-Deficient Rats **(136)**

**Michelle M. McDonald, Kathy Mikulec, Lauren Peacock, Paul A. Baldock, and David G. Little**

Enhanced Expression of BMP2/Smad Pathway and SP7 by Statins during Fracture Repair **(125)**

**Gloria E. Gutierrez, Jianghong Zhang, Satyawan Jadhav, Munoz A. Steve and Gregory R. Mundy**

Evaluation of the Relative Mineral-Binding Affinities of Clinically-Relevant Bisphosphonates by Using Hydroxyapatite-Column Chromatography and Adsorption Isotherms Combined with Mass Spectrometric Analysis **(162)**

**Zhidao Xia, Xuchen Duan, Rachel M. Locklin, Mike Quijano, Roy L.M. Dobson, James T. Triffitt, Frank H. Ebetino, and Graham R.G. Russell**

Structure Activity Relationships of Nitrogen Containing Bisphosphonates Which Induce Conformational Changes in Farnesyl Pyrophosphate Synthase (119)  
**James E. Dunford**, Aaron A. Kwaasi, Kathryn L. Kavanagh, Michael J. Rogers, Udo Oppermann, Bobby B. Barnett, Frank H. Ebetino, and R. Graham G. Russell

Treatment with RAP-011 (A Soluble Activin Receptor Type IIA) Increases Bone Mineral Density in Mice with Prior Bisphosphonate Exposure (144)

**R. Scott Pearsall**, Michelle Mangini, Milton Cornwall-Brady, Travis Monnell, Tod Marvell, Brendan Haigis, Ravindra Kumar, Kathryn W. Underwood, and Jasbir Seehra

Session **Invited Lecture**  
**Translational**  
Chairpersons: Roland Baron (Boston, USA); Wim Van Hul (Antwerp, Belgium)

1130 - 1200 Sclerostin as a New Bone Anabolic Target  
**Hua Zhu Ke (Thousand Oaks, USA)**

**Afternoon**

Session **Invited Lectures**  
**Bone Therapeutics**  
Chairpersons: Steve Cummings (San Francisco, USA); T. Jack Martin (Melbourne, Australia)

1645 - 1730 Regulation of Endogenous Levels of PTH by Calcilytic Compounds  
**Edward Nemeth (Toronto, Canada)**

1730 - 1800 PTH as a Bone Anabolic – Future Directions  
**Jürg Gasser (Basel, Switzerland)**

1800 - 1820 Refreshments

Session **Satellite Symposium**  
**Cathepsin K: A New Therapeutic Target**  
*Sponsored by Merck & Co., Inc.*  
Chairpersons: Anne de Papp (Upper Gwynedd, USA)

1820 - 1950 Discovery of a Selective Cathepsin K Inhibitor  
**Cameron Black (Quebec, Canada)**

Preclinical studies with odanacatib  
**Don Kimmel (West Point, USA)**

Clinical Development of Odanacatib for the Treatment of Osteoporosis  
**Avery Ince (Rahway, USA)**

Panel Discussion

After Dinner Fireside Chats

Thursday March 13, 2008

Morning

Session

Invited Lectures

Bone Therapeutics

Chairpersons: Stuart Ralston (Edinburgh, UK); Theresa Guise (Charlottesville, USA)

0800 - 0830

SARMs in the Laboratory and Clinic  
**Leonard Freedman (Collegeville, USA)**

0830 - 0900

Cathepsin K Inhibitors: From the Bench to the Clinic  
**Le Duong (West Point, USA)**

0900 - 0930

SERMs - What is Their Clinical Potential  
**Steve Cummings (San Francisco, USA)**

0930 - 1000

Estrogen - Does it Still Have a Role?  
**Juliet Compston (Cambridge, UK)**

1000 - 1030

Refreshments

1000 - 1100

Poster Viewing - Poster Numbers 164 - 202

1000-16:35

**SWISS BONE GROUPS' ANNUAL MEETING, Aspen Hall and Foyer C2**

Session

Oral Presentations

Bone Therapeutics

Chairpersons: Juliet Compston (Cambridge, UK); Robert Lindsay (West Haverstraw, NY USA)

1100 - 1200

A Randomized, Double-Blind, Placebo-Controlled Study of a Cathepsin-K Inhibitor in the Treatment of Postmenopausal Women with Low BMD: 18-Month Results **(126)**

**Avery Ince, Michael McClung, Henry Bone, Nadia Verbruggen, Andrea Rybak-Feiglin, Carolyn daSilva, and Arthur Santora**

Short-Time Zoledronic Acid Pretreatment Stimulates Osteogenic Differentiation of Human Mesenchymal Stem Cells **(120)**

**Franz Jakob, Regina Ebert, Ralf Krug, Jutta Meissner-Weigl, Sabine Zeck, and Doris Schneider**

Bone Mineral Density and Biochemical Marker Response Rates in Postmenopausal Women after Treatment with Zoledronic Acid **(115)**

**Pierre D. Delmas, Ian Reid, Rene Rizzoli, Silvano Adami, Philip Sambrook, Erik F. Eriksen, Peter Mesenbrink, and Richard Eastell**

Inhibition of Osteoblast Function by Bisphosphonates **(143)**

**Isabel R. Orriss, Michelle L. Key, Kay W. Colston, and Timothy R. Arnett**

Comparison of Bone Architecture Via Micro-CT after Long-Term Treatment with Risedronate and Alendronate: A Cross-Sectional Study in Women with Postmenopausal Osteoporosis **(117)**

**R.J. Phipps, T.E. Dufresne, P.A. Chmielewski, J.H. Nurre, B. Borah, X. Zhou, G. Woodson, and P.D. Miller**

Use of a Fluorescent Analogue of Risedronate To Study Localisation and Cellular Uptake of Bisphosphonates *In Vivo* **(150)**

**Anke J. Roelofs, Fraser P. Coxon, F. Hal Ebetino, Joy F. Bala, Boris A. Kashemirov, Charles E. McKenna, and Michael J. Rogers**

*In Vivo* Effects of Zoledronic Acid on Peripheral  $\gamma/\delta$  T Lymphocytes in Early Breast Cancer Patients **(196)**

**Daniele Santini, Federico Martini, Maria Elisabetta Fratto, Sara Galluzzo, Bruno Vincenzi, Chiara Agrati, Federica Turchi, Paola Piacentini, Laura Rocci, Giuseppe Tonini, and Fabrizio Poccia**

Intravenous and Oral Ibandronate Are Equally Effective in Metastatic Bone Pain Reduction Regardless of Previous Bisphosphonate Treatment (176)

**Johannes Ziegler, Henning Kühnle, Jörg Seraphin, and Harald Meden**

The Effect of Adjuvant Chemotherapy with a Taxane and a Bisphosphonate on Bone Mass and Bone Strength in an Animal Model (179)

**A.A. Kurth, M. Shea, B. Janz, P. Augat, and A. Müller**

Zoledronic Acid-Induced IPP Accumulation in Cancer Cells Strongly Correlates with Gammadelta T-Cell Mediated Cancer Cell Death (187)

**Hannu Monkkonen, Ismahene Benzaid, Verena Stresing, Jonathan Green, Jukka Monkkonen, Jean L. Touraine and Philippe Clezardin**

Session

**Satellite Symposium**

**Bisphosphonates for Patients with Breast Cancer and Bone Metastases**

**- Current Controversies**

*Sponsored by F. Hoffmann-La Roche LTD, Basel, Switzerland*

Chairpersons: Jean-Jacques Body (Brussels, Belgium); Robert Coleman (Sheffield, UK)

1215 - 1345

From the Lab to the Clinic: Where are Bisphosphonates Going?

**Andreas Kurth (Frankfurt, Germany)**

Oral versus I.V. Bisphosphonates Efficacy: Is There a Compromise for Patients and Physicians?

**Jean-Jacques Body (Brussels, Belgium)**

Is Renal Function Monitoring Necessary in Bisphosphonates Treatment?

**Ingo Diel (Mannheim, Germany)**

Should We be Worried about ONJ?

**Dieter Felsenberg (Berlin, Germany)**

Are Bone Markers a Surrogate for Clinical Efficacy?

**Robert Coleman (Sheffield, UK)**

Panel Q & A and discussion

**Thursday March 13, 2008**

**Afternoon**

Session **Satellite Symposium**  
**The Role of the RANK/RANK Ligand/OPG Pathway in Pathological Bone Loss**  
*Sponsored by Amgen, Inc.*  
Chairperson: Ian Reid (Auckland, New Zealand)

1530 - 1700 Update on RANK Ligand Inhibition in Pre-clinical Models of Bone Loss  
**Peter Croucher (Sheffield, UK)**

Advances in Targeting the RANK/RANKL/OPG Pathway in Osteoporosis  
**Socrates Papapoulos (Leiden, The Netherlands)**

RANK Ligand Inhibition in Cancer Patients: Current Status  
**Jean-Jacques Body (Brussels, Belgium)**

Session **Invited Lectures**  
**Bone Therapeutics**  
Chairpersons: Mike Rogers (Aberdeen, UK); F. Hal Ebetino (Mason, USA)

1715 - 1800 Herbert Fleisch Memorial Lecture: Bisphosphonates, Past, Present and Future  
**Graham Russell (Oxford, UK)**

1800 - 1830 Bisphosphonates - Current Clinical Issues  
**Socrates Papapoulos (Leiden, The Netherlands)**

1830 - 1845 Break

Session **Invited Lectures**  
**Bone Therapeutics**  
Chairpersons: Francis Glorieux (Montreal, Canada); Socrates Papapoulos (Leiden, The Netherlands)

1845 - 1915 Therapy of Pediatric Bone Conditions  
**Nick Bishop (Sheffield, UK)**

1915 - 1945 Pathogenesis and Managements of Paget's Disease  
**Stuart Ralston (Edinburgh, UK)**

After Dinner Fireside Chats

Friday March 14, 2008

**Morning**

Session

**Satellite Symposium**

**Bisphosphonate Mechanism of Action:**

**Application to Understanding Potential Clinical Differentiation**

*Sponsored by The Alliance for Better Bone Health*

Chairperson: F. Hal Ebetino (Mason, USA)

0800-0930

Connecting the Mechanistic Pharmacology of Bisphosphonates to Potential Clinical Differences

**Graham Russell (Oxford, UK)**

Evidence for Potential Similarities and Differences in Cellular & Skeletal Distribution of Bisphosphonates

**Michael Rogers (Aberdeen, UK)**

The Osteocyte as a Potential Target Cell of Bisphosphonates and Role in Bone Strength

**Roger Phipps (Mason, USA)**

Evidence for Clinical Differentiation of Bisphosphonates

**Serge Ferrari (Geneva, Switzerland)**

Closing - Questions & Discussion

Session

**Oral Presentations**

**Bone Therapeutics**

Chairpersons: Nick Bishop (Sheffield, UK); Rob Coleman (Sheffield, UK)

0930 - 1000

Differential Effects of Host-Derived MMPs on Development of Multiple Myeloma *In Vivo* (169)

**Claire M. Edwards**, *Conor C. Lynch, Jessica A. Fowler, Kathy Carter, Seint T. Lwin, Lynn M. Matrisian, and Gregory R. Mundy*

Farnesoid X Receptor in Primary Breast Carcinoma: A New Marker To Predict Bone Metastasis? (175)

**Fabrice Journe**, *Virginie Durbecq, Carole Chaboteaux, Ghislane Rouas, Hichame IdBoufker, Guy Laurent, Denis Larsimont, and Jean-Jacques Body*

Macrophage Inflammatory Protein (MIP)-3<sup>q</sup>/CCL20 and Its Receptor CCR6 Are Overexpressed in the Bone Microenvironment and Involved in Osteoclast Formation in Multiple Myeloma Patients: Potential Relationship With the Presence of Osteolytic Lesions (171)

**Nicola Giuliani**, *Gina Lisignoli, Sara Tagliaferri, Francesca Morandi and Vittorio Rizzoli*

Conditional Mouse Osteosarcoma, Dependent on p53 Loss and Potentiated by Loss of Rb, Mimics the Human Disease (202)

**Carl R. Walkley**, *Rameez Qudsi, Vijay G. Sankaran, Monica Gostissa, Stanford I. Roth, Stephen J. Rodda, Erin Snay, Patricia Dunning, Frederic H. Fahey, Frederick W. Alt, Andrew P. McMahon and Stuart H. Orkin*

Antineoplastic Activity of Bone-Targeted Nanoparticles Loaded with Doxorubicin (195)

**Manuela Salerno**, *Sofia Avnet, Caterina Fotia, Elisabetta Cenni, Donatella Granchi, Francesco Castelli, Dorothea Micieli, Rosario Pignatello, Armando Giunti, and Nicola Baldini*

1000 - 1030

Break

**Session**      **Invited Lectures**  
**Bone Therapeutics**  
*Sponsored by Novartis Oncology*  
Chairpersons: Graham Russell (Oxford, UK); Jean-Jacques Body (Brussels, Belgium)

1030 - 1110	The Premetastatic Niche <b>Gregory Mundy (Nashville, USA)</b>
1110 - 1150	Mechanisms of Bone Metastasis and Novel Therapeutic Strategies <b>Theresa Guise (Charlottesville, USA)</b>
1150 - 1230	Overview of the Management of Bone Disease in Cancer Patients <b>Robert Coleman (Sheffield, UK)</b>
1230 - 1240	Closing Remarks

**Abstracts Key**

Osteoblasts	1 - 40
Osteoclasts	41 - 55
Systemic and Local Regulation of Skeletal Metabolism	56 - 110
Bone Therapeutics – Benign Conditions	111 - 163
Bone Therapeutics – Malignancy	164 - 202
Late Abstracts	