



Annual Meeting

25-26 June 2014
Sheffield, UK



Final Programme

Bone Research Society

www.brsoc.org.uk

The Society (formerly known as the Bone and Tooth Society) is the oldest and largest scientific society in Europe dedicated to further research into clinical and basic science problems related to mineralised tissues. The BRS Annual Meeting attracts a wide audience from throughout the UK and also from continental Europe and further afield. The presentations are traditionally a balance between clinical and laboratory-based studies. The participation of young scientists and clinicians is actively encouraged.

Committee 2013/14

Tim Arnett (London) (President)
Alison Gartland (Sheffield) (Secretary)
Jim Gallagher (Liverpool) (Treasurer)
Eugene McCloskey (Sheffield) (President-Elect)

Gavin Clunie (Cambridge)
Fraser Coxon (Aberdeen)
James Edwards (Oxford)
Celia Gregson (Bristol)
Isabel Orriss (London)
Gudrun Stenbeck (Brunel)
Adam Taylor (Lancaster)
Kate Ward (Cambridge)

Membership

For membership enquiries email info@brsoc.org.uk

Future meetings

BRS Clinical Training Course: Osteoporosis and Other Metabolic Bone Diseases
Oxford, 13-15 April 2015

BRS 2015 (jointly with the British Society for Matrix Biology)
1-3 September 2015
Edinburgh, UK

For further details on all BRS activities and events please see www.brsoc.org.uk

2014 Meeting

Local Organising Committee

Allie Gartland (Co-chair)
Eugene McCloskey (Co-chair)
Janet Crompton
Richard Eastell
Graham Russell
Tim Skerry

Award winners

Congratulations to all the BRS Award Winners at the Sheffield meeting:

New Investigator Awards:

(awarded prior to the meeting, based on scores achieved during the blind review process)

OC4 - M-T Haider (Sheffield) - Tumour cells home to osteoblast-rich areas – effects of a single dose of Zoledronic acid on the bone metastatic niche in vivo

OC6 - I Huggins (Sheffield) - A role for P2X7 in lysyl oxidase mediated osteoclastic lesion formation and bone remodelling.

OC20 - J Misra (Sheffield) - Novel effects of bisphosphonates on stem cells and tissue regeneration

OC18 - S Olechnowicz (Oxford) - Apolipoprotein-A1 deficiency is associated with bone loss in vivo: a new target for musculoskeletal disorders

OC5 - S Rao Rao (Oxford) - MiR-373 inhibits functional osteomimicry in osteoblastic prostate cancer cells

OC13 - M Vazquez (Cardiff) - A three-dimensional bone model that incorporates mechanical loading for therapeutic testing.

OC19 - P Vickerton (Liverpool) - Biomechanical impact of localised bone adaptation

ASBMR Travel Grants:

(awarded prior to the meeting to New Investigator ASBMR members residing outside of the UK to attend the Sheffield meeting. Awards based on scores achieved during the blind review process)

P4 - A Green (Fitzroy, Australia) - Retinoic Acid Receptor (RAR) agonists inhibit and RAR antagonists potentiate osteoblastic differentiation of mesenchymal progenitor cells

P66 - Y Zhou (Newark, USA) - Bisphosphonate can rescue cartilage from trauma damage by regulating the metabolic activities of chondrocytes

On site awards for Best Poster, Best Oral Communication and Best Oral Poster to be announced at the end of the meeting (2 for each category)

**Tuesday 24
June**

Bone Research Society/Mellanby Centre for Bone Research

Pre-meeting Workshops

Venue: The University of Sheffield Medical School

13:00-14:30

New Investigator Workshop

A guide to successfully presenting your work at a scientific meeting

Celia Gregson (Bristol, UK)/Adam Taylor (Lancaster, UK)

With Gaynor Miller (Sheffield, UK)

14:30-15:30

Systems Biology Seminar

Tom Kirkwood (Newcastle upon Tyne, UK)

Carole Proctor (Newcastle upon Tyne, UK)

15:30-17:00

Concurrent Workshops

In vivo CT

Ilaria Bellantuono, Maya Boudiffa, Les Coulton (Sheffield, UK)

All you ever wanted to know about bone histopathology

David Hughes (Sheffield, UK)

Muscle and Bone

Alex Ireland (Manchester, UK)/Kate Ward (Cambridge, UK)

With Mark Edwards (Southampton, UK)/Nigel Loveridge (Cambridge, UK)

Generously supported by Novotec Medical*

17:15-19:00

Accommodation check-in, registration and networking

Venue: The Edge

19:15-22:30

Rare Bone Diseases Workshop

Venue: Rutland Hotel

In association with Arthritis Research UK Rare Bone Disease Topic Specific Group (Metabolic Bone Disease Clinical Studies Group) and Findacure

Chairs: **Gavin Clunie** (Cambridge, UK)/**Jim Gallagher** (Liverpool, UK)

Eileen Shore (Philadelphia, USA) Why study rare bone diseases?

Michael Whyte (St Louis, USA): The USA perspective

Kassim Javaid (Oxford, UK): The NIHR rare disease musculoskeletal translational research collaboration

Mike Briggs (Newcastle-upon-Tyne, UK): 'ESDN', 'EuroGrow' & 'SYBIL' – 15+ years of EU network approaches for diagnosis and research of rare skeletal diseases

Nick Bishop (Sheffield, UK): Setting up an international consortium to facilitate research into paediatric bone diseases

Lakshminarayan Ranganath (Liverpool, UK): Progress in black bone disease, the National Alkaptonuria Centre and DevelopAKUre

Nick Sireau (Findacure): Building collaboration in rare disease research

Gavin Clunie (Cambridge, UK): Opportunities for optimising management of, and research in, rare bone diseases from UK NHS Specialised Services Commissioning

Wednesday 25 June	Bone Research Society Annual Meeting <i>All sessions at The Edge, The University of Sheffield Endcliffe Student Village</i>
09:00-09:50	Registration and coffee Poster hanging
09:50	Welcome and Opening remarks Tim Arnett (London, UK)/ Eugene McCloskey (Sheffield, UK)
10:00-11:00	Symposium 1 What have the engineers ever done for us? Generously supported by Mindways QCT* Chairs: Damien Lacroix (Sheffield), UK/Katherine Staines (Edinburgh, UK)
IS1	Something in the way she moves Claudia Mazzà (Sheffield, UK)
IS2	What have the engineers ever done for us? Clinical applications of engineering principles Ken Poole (Cambridge, UK)
11:00-11:30	Oral Communications Chairs: Claudia Mazzà (Sheffield, UK)/Ken Poole (Cambridge, UK)
OC1	Focal osteoporosis in the trabeculae of the femoral head in hip fracture L Skingle* ^[1] , F Jóhannesdóttir ^[2] , PM Mayhew ^[1] , K Blesic ^[1] , KES Poole ^[2] ^[1] Department of Medicine, Cambridge NIHR Biomedical Research Centre, Cambridge, UK; ^[2] Department of Medicine, University of Cambridge, Cambridge, UK
OC2	Placental size is associated differentially with postnatal bone size and volumetric density C Holroyd* ^[1] , C Osmond ^[1] , DJP Barker ^[1] , S Ringe ^[2] , D Lawlor ^[2] , J Tobias ^[3] , G Davey Smith ^[2] , C Cooper ^[1,4,5] , NC Harvey ^[1,4] ^[1] MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton, UK; ^[2] MRC Integrative Epidemiology Unit, University of Bristol, Bristol, UK; ^[3] Academic Rheumatology, Musculoskeletal Research Unit, Avon Orthopaedic Centre, Bristol, UK; ^[4] NIHR Southampton Biomedical Research Centre, University of Southampton and University Hospital Southampton NHS FT, Southampton, UK; ^[5] NIHR Musculoskeletal Biomedical Research Unit, University of Oxford, Oxford, UK
OC3	Which model of FRAX to use in immigrant populations: results from an analysis in Sweden EV McCloskey* ^[1] , A Oden ^[1] , H Johansson ^[1] , M Lorentzon ^[2] , M Karlsson ^[3] , JA Kanis ^[1] , D Mellstrom ^[2] ^[1] WHO Collaborating Centre for Metabolic Bone Diseases, University of Sheffield, Sheffield, UK; ^[2] University of Gothenberg, Gothenberg, Sweden; ^[3] , Lund University, Malmo, Sweden
11:30-12:30	Posters – odd numbers manned
12:30-13:30	Lunch
13:10-13:30	BRS AGM

13:30-14:30

Oral Communications

Chairs:

James Edwards (Oxford, UK)/Shelley Lawson (Sheffield, UK)

- OC4 Tumour cells home to osteoblast-rich areas – effects of a single dose of Zoledronic acid on the bone metastatic niche in vivo
M.T Haider*^[1], I. Holen^[1], H.K. Brown^[1]
^[1]CR-UK/YCR Sheffield Cancer Research Centre, Medical School, University of Sheffield, Sheffield, UK
- OC5 MiR-373 inhibits functional osteomimicry in osteoblastic prostate cancer cells
SR Rao*^[1], P Kratschmer^[2], JR Edwards^[2], FC Hamdy^[1], CM Edwards^[1,2]
^[1]Nuffield Department of Surgical Sciences, University of Oxford, Oxford, UK;
^[2]Nuffield Department of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, UK
- OC6 A role for P2X7 in lysyl oxidase mediated osteoclastic lesion formation and bone remodelling
ID Huggins*^[1], P Ottewell^[1], RMH Rumney^[1], TR Cox^[2], JT Erler^[2], A Gartland^[1]
^[1]The Mellanby Centre for Bone Research, Dept. of Human Metabolism, University of Sheffield, Sheffield, UK; ^[2]Biotech Research and Innovation Centre, University of Copenhagen, Copenhagen, Denmark
- OC7 Androgen treatment accelerates the calcification of vascular smooth muscle cells
D Zhu*^[1], PWF Hadoke^[2], LB Smith^[3], VE MacRae^[1]
^[1]Developmental Biology, The Roslin Institute and R(D)SVS, University of Edinburgh, Edinburgh, UK; ^[2]Centre for Cardiovascular Science, The Queen's Medical Research Institute, University of Edinburgh, Edinburgh, UK; ^[3]Chair of Genetic Endocrinology, MRC Centre for Reproductive Health, University of Edinburgh, Edinburgh, UK
- OC8 Activation of the P2Y2 receptor enhances osteoclast function by stimulating the release of ATP, a pro-resorptive extracellular nucleotide
IR Orriss*^[1], MOR Hajjawi^[2], TR Arnett^[2]
^[1]Comparative Biomedical Sciences, The Royal Veterinary College, London, UK;
^[2]Department of Cell and Developmental Biology, University College London, London, UK
- OC9 Liraglutide, a glucagon-like peptide-1 receptor agonist improves bone mass and architecture in ovariectomised mice
M Pereira*^[1], J Jeyabalan^[1], C Jørgensen^[1], M Cleasby^[1], M Hopkinson^[1], C Chenu^[1]
^[1]Comparative Biomedical Sciences, Royal Veterinary College, London, UK

14:30-15:30

Oral Posters

Chairs:

Eugene McCloskey (Sheffield, UK)/Gudrun Stenbeck (Brunel, UK)

- OP1 Starting on an unequal footing: walking onset age and bone strength in toddlers
A Ireland*^[1], J Rittweger^[2], E Schönau^[3], C Lamberg-Allardt^[4], H Viljakainen^[4]
^[1]School of Healthcare Science, Manchester Metropolitan University, Manchester, UK;
^[2]Institute of Aerospace Medicine, German Aerospace Centre, Cologne, Germany;
^[3]Department of Pediatric Endocrinology and Diabetics, Children's Hospital, Cologne, Germany; ^[4]Department of Food and Environmental Sciences, University of Helsinki, Helsinki, Finland

- OP2 The effect of nitrogen containing bisphosphonates, zoledronate and alendronate, on the production of pro-angiogenic factors by osteoblastic cells
S Ishtiaq*^[1], S Edwards^[2], A Sankalingam^[1], B Evans^[3], M Frost^[2], I Fogelman^[2], G Hampson^[1,2]
^[1]Clinical Chemistry, Guy's and St Thomas' NHS trust, London, UK; ^[2]Osteoporosis Unit, Guy's Hospital, London, UK; ^[3]Institute of Molecular and experimental medicine, Cardiff University, Cardiff, UK
- OP3 Does bone density, bone strength, sarcopenia or dynapenia explain greater risk of fracture in obesity?
AL Evans*^[1], R Eastell^[1], JS Walsh^[1]
^[1]Academic Unit of Bone Metabolism, University of Sheffield, Sheffield, UK
- OP4 Fragmenting densely mineralised acellular protrusions from articular calcified cartilage: a role in osteoarthritis?
A Boyde*^[1], GR Davis^[1], D Mills^[1], T Zikmund^[1], VL Adams^[2], LR Ranganath^[2], N Jeffery^[2], JA Gallagher^[2]
^[1]Dental Physical Sciences, QMUL, London, UK; ^[2]Musculoskeletal Biology, University of Liverpool, Liverpool, UK
- OP5 Understanding the roles of PHOSPHO1 and SMPD3 in the initiation of skeletal mineralisation
DA Houston*^[1], JL Millan^[2], C Huesa^[1], VE MacRae^[1], C Farquharson^[1]
^[1]Developmental Biology division, The Roslin Institute, Edinburgh, UK; ^[2]Sanford Children's Health Research Center, Sanford-Burnham Medical Research Institute, La Jolla, USA
- OP6 TGF- β suppression with a neutralizing antibody increases vertebral body strength
J Nyman*^[1,2,3], S Uppuganti^[1], B Rowland^[2], A Merkel^[4], A Makowski^[1,3], D Perrien^[1,2], J Sterling^[2,4,5]
^[1]Department of Orthopaedic Surgery & Rehabilitation, Vanderbilt University, Nashville, USA; ^[2]Department of Veterans Affairs, Tennessee Valley Healthcare System, Nashville, USA; ^[3]Department of Biomedical Engineering, Vanderbilt University, Nashville, USA; ^[4]Department of Medicine, Vanderbilt University, Nashville, USA; ^[5]Department of Cancer Biology, Vanderbilt University, Nashville, USA
- OP7 Phospho1 deficiency transiently modifies bone architecture yet produces consistent modification in osteocyte differentiation and vascularization with ageing
B Javaheri*^[1], A Carriero^[2], S Shefelbine^[2], J Millan^[3], K Oldnow^[4], C Farquharson^[4], A Pitsillides^[1]
^[1]CBS, The Royal Veterinary College, London, UK; ^[2]Bioengineering, Imperial College, London, UK; ^[3], Burnham Institute, San Diego, USA; ^[4], The Roslin Institute, Edinburgh, UK
- OP8 Defining the molecular effects of disease-causing mutations in RANK using human protein expression models
S Das^[1], A Duthie^[1], J Bramham^[2], J Crockett*^[1]
^[1]Musculoskeletal Research Programme, University of Aberdeen, Aberdeen, UK; ^[2]Institute of Structural and Molecular Biology, University of Edinburgh, Edinburgh, UK
- OP9 Tissue engineering hypertrophic cartilage for bone regeneration
K Bardsley^[1], C Freeman^[1], IM Brook^[1], PV Hatton^[1], A Crawford*^[1]
^[1]School of Clinical Dentistry, University of Sheffield, Sheffield, UK
- OP10 Ethnicity and bone in South African adolescents: longitudinal analysis of size and volumetric density using peripheral quantitative computed tomography (pQCT)
S Schoenbuchner*^[1,2], K Ward^[1], S Norris^[2], A Prentice^[1], L Micklesfield^[2], J Pettifor^[2]
^[1]MRC Human Nutrition Research, Cambridge, United Kingdom; ^[2]MRC/Wits

Developmental Pathways for Health Research Unit, Department of Paediatrics and Child Health, University of the Witwatersrand, Johannesburg, South Africa

OP11 Treatment with allopurinol and oxypurinol promotes osteoblast differentiation and increases bone formation

IR Orriss*^[1], TR Arnett^[2], J George^[3], M Witham^[3]

^[1]Comparative Biomedical Sciences, The Royal Veterinary College, London, UK; ^[2]Cell and Developmental Biology, University College London, London, UK; ^[3]School of Medicine, University of Dundee, Dundee, UK

15:30-16:15 **Coffee and Posters**

16:15-17:15 **Symposium 2**
Lessons to be learned from rare bone diseases

Generously supported by Alexion*

Chairs:

Jim Gallagher (Liverpool, UK)/Celia Gregson (Bristol, UK)

IS3 Fibrodysplasia ossificans progressiva - genetics is just the start
Eileen Shore (Philadelphia, USA)

IS4 FGF-23 as a therapeutic target: lessons from rare diseases
Michael Whyte (St Louis, USA)

17:15-17:45 **Charles Dent Lecture**

Chairs:

Allie Gartland (Sheffield, UK)/Eugene McCloskey (Sheffield, UK)

PTHrP, from cancer hormone to multifunctional cytokine
Jack Martin (Melbourne, Australia)

17:45 **Break**

18:00-19:00 **Symposium 3**
Osteoporosis treatments: the Elixir of Life?

Generously supported by MSD*

Chairs:

Sarah Hardcastle (Bristol, UK)/Graham Russell (Oxford and Sheffield, UK)

IS5 Osteoporosis treatments: the elixir of life? A clinical context
Ken Lyles (Durham, USA)

IS6 Osteoporosis treatments: the elixir of life? A scientific context
Iliaria Bellantuono (Sheffield, UK)

20:00 **BRS Annual Dinner: BBQ**

Music from The Zeros

The Ridge, Ranmoor Student Village, Shore Lane, Sheffield S10 3AY

Thursday 26 June **Bone Research Society Annual Meeting**
All sessions at The Edge, University of Sheffield Endcliffe Student Village

08:30-09:30 **Symposium 4**
Osteocytes

Generously supported by Amgen and UCB*

Chairs:
Nigel Loveridge (Cambridge, UK)/Isabel Orriss (London, UK)

IS7 Insights into osteocyte biology using novel culture techniques
Bronwen Evans (Cardiff, UK)

IS8 Clinical aspects of pharmacological manipulation of sclerostin signalling
Bente Langdahl (Aarhus, Denmark)

09:30-10:30 **Oral Communications**

Chairs:
Bronwen Evans (Cardiff, UK)/Bente Langdahl (Aarhus, Denmark)

OC10 Stabilisation of E11 protein accelerates osteocyte differentiation and protects against osteoarthritis pathology
KA Staines*^[1], M Prideaux^[1,2], N Loveridge^[3], DJ Buttle^[4], AA Pitsillides^[5], C Farquharson^[1]
^[1]Developmental Biology, Roslin Institute, The University of Edinburgh, Edinburgh, UK; ^[2]Orthopaedics and Trauma, The University of Adelaide, Adelaide, Australia; ^[3]Orthopaedic Research Unit, University of Cambridge, Cambridge, UK; ^[4]Department of Infection and Immunity, The University of Sheffield, Sheffield, UK; ^[5]Comparative Biomedical Sciences, Royal Veterinary College, London, UK

OC11 Relating neurotransmitter signals to mechanical loads in human bone
DJ Mason*^[1,4], C Wilson^[2,4], C Bonnet^[1,4], H Ozturk^[3,4], G Whatling^[3,4], C Holt^[3,4]
^[1]School of Biosciences, Cardiff University, Cardiff, UK; ^[2]Cardiff and Vale Orthopaedic Centre, Llandough Hospital, Cardiff, UK; ^[3]School of Engineering, Cardiff University, Cardiff, UK; ^[4]Arthritis Research UK Biomechanics and Bioengineering Centre, Cardiff University, Cardiff, UK

OC12 Remote controlled mechanotransduction via magnetic nanoparticles promotes osteogenesis; applications for injectable cell therapy
JR Henstock*^[1], M Rotherham^[1], AJ El Hajj^[1]
^[1]Institute for Science and Technology in Medicine, Keele University, Stoke-on-Trent, UK

OC13 A three-dimensional bone model that incorporates mechanical loading for therapeutic testing
M Vazquez*^[1], BAJ Evans^[1,2], S Evans^[1,3], D Riccardi^[1,4], JR Ralphs^[4], DJ Mason^[1,4]
^[1]Arthritis Research UK Biomechanics and Bioengineering Centre, Cardiff University, Cardiff, UK; ^[2]Department of Child Health, Institute of Molecular & Experimental Medicine, Cardiff University, Cardiff, UK; ^[3]Institute of Mechanical and Manufacturing Engineering, Cardiff University, Cardiff, UK; ^[4]Division of Pathophysiology and Repair, Cardiff University, Cardiff, UK

OC14 Defining critical periods and pathways in skeletal mechanosensitivity in embryonic limbs
AS Pollard*^[1], IM McGonnell^[1], C Chenu^[1], Z Cheng^[1], C Farquharson^[2], AA Pitsillides^[1]
^[1]Comparative Biomedical Sciences, Royal Veterinary College, London, UK; ^[2]The Roslin Institute, R(D)SVS, The University of Edinburgh, , Easter Bush, Midlothian, UK

- OC15 ATP-induced ATP release from osteoblastic cells: a mechanism to sustain and propagate purinergic signalling in bone
JP Dillon*^[1], G Vindigni^[1], PJ Wilson^[1], LR Ranganath^[1], JA Gallagher^[1]
^[1]Department of Musculoskeletal Biology, University of Liverpool, Liverpool, UK
- 10:30-11:00 Coffee
- 11:00-12:00 **Posters – even numbers manned**
- 12:00-13:00 **Lunch**
- 13:00-14:00 **Symposium 5**
Muscle, fat and bone
- Generously supported by Consilient***
- Chairs:
Adam Taylor (Lancaster, UK)/Kate Ward (Cambridge, UK)
- IS9 Muscle, marrow fat and bone: common origins, common cytokines, common regulation
Clifford Rosen (Maine, USA)
- IS10 Body fat, vitamin D and bone
Jennifer Walsh (Sheffield, UK)
- 14:00-15:00 **Clinical Cases**
- Chairs:
Mark Edwards (Southampton, UK)/Roger Smith (Oxford, UK)
- CC1 Hyperphosphataemic tumoral calcinosis: an unusual cause of elbow swelling
NFA Peel*^[1], A Ali^[2]
^[1]Metabolic Bone Centre, Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK; ^[2]Department of Orthopaedics, Sheffield Teaching Hospitals NHS Foundation Trust, Sheffield, UK
- CC2 Congenital insensitivity to pain with massive osteophytosis and bony sclerosis; should we be concerned about nerve blocking therapies in osteoarthritis?
F Hayes*^[1], N Shenker^[1], G Clunie^[1], G Woods^[2], T Vincent^[3], K Poole^[1]
^[1]Rheumatology Department, Addenbrooke's Hospital, Cambridge, UK; ^[2]Clinical Genetics Department, Addenbrooke's Hospital, Cambridge, UK
- CC3 Migratory regional osteoporosis mimicking an inflammatory oligoarthritis
AI Rutherford*^[1], AP Cope^[1], G Hampson^[1]
^[1]Rheumatology Department, Guy's and St Thomas' NHS Foundation Trust, London, UK
- CC4 Exome chip analysis of a Gambian family with hereditary hypophosphataemic rickets with hypercalciuria
V Braithwaite*^[1], M Silver^[2], A Prentice^[1,3], B Hennig^[2]
^[1]Nutrition & Bone Health, MRC Human Nutrition Research, Cambridge, UK; ^[2]MRC International Nutrition Group, LSHTM & MRC Keneba, London, Keneba, UK & The Gambia; ^[3]MRC Keneba, MRC Gambia, Keneba, The Gambia
- 15:00-15:30 **Coffee**

15:30-16:30

Oral Communications

Chairs:

Fraser Coxon (Aberdeen, UK)/Ken Lyles (Durham, USA)

- OC16 Castration stimulates proliferation of disseminated prostate cancer cells in bone: In vivo evidence supports early intervention with zoledronic acid
PD Ottewell*^[1], N Wang^[2], J Meek^[1], CA Fowles^[2], PI Croucher^[3], CL Eaton^[2], I Holen^[1]
^[1]Clinical Oncology, University of Sheffield, Sheffield, UK; ^[2]Bone Biology, University of Sheffield, Sheffield, UK; ^[3]Musculoskeletal Medicine, Garvan Institute for Medical Research, Sidney, Australia
- OC17 PHOSPHO1: An example of the interplay between bone mineralisation and energy metabolism
KJ Oldknow*^[1], NM Morton^[2], MC Yadav^[3], S Rajoanah^[2], C Huesa^[1], L Bunger^[4], D Ball^[5], M Ferron^[6], G Karsenty^[7], VE MacRae^[1], JL Millan^[3], C Farquharson^[1]
^[1]Developmental Biology, The Roslin Institute, University of Edinburgh, Edinburgh, UK; ^[2]Cardiovascular Science, University of Edinburgh, Edinburgh, UK; ^[3]Sanford Children's Health Research Center, Sanford Burnham, La Jolla, USA; ^[4]Growth Genetics, SRUC, Edinburgh, UK; ^[5]School of Life Sciences, Heriot watt, Edinburgh, UK; ^[6]IRCM, McGill University, Quebec, Canada; ^[7]Genetics and Development, Columbia University, New York, USA
- OC18 Apolipoprotein-A1 deficiency is associated with bone loss in vivo: a new target for musculoskeletal disorders
SWZ Olechnowicz*^[1], S Munshaw^[1], ST Lwin^[1], JR Edwards^[2], CM Edwards^[1,2]
^[1]Nuffield Dept. of Surgical Sciences, University of Oxford, Oxford, UK; ^[2]Nuffield Dept. of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, UK
- OC19 Biomechanical impact of localised bone adaptation
P. Vickerton*^[1], J.C. Jarvis^[2], J.A. Gallagher^[1], R. Akhtar^[3], N. Jeffery^[1]
^[1]Department of Musculoskeletal Biology, University of Liverpool, Liverpool, UK; ^[2]Research Institute for Sports and Exercise Sciences, John Moores University, Liverpool, UK; ^[3]Centre for Materials and Structures, School of Engineering, University of Liverpool, Liverpool, UK
- OC20 Novel effects of bisphosphonates on stem cells and tissue regeneration
J Misra*^[1], S T. Mohanty^[1], S Madan^[2], J A. Fernandes^[2], F H. Ebetino^[3,4], H Roehl^[5], R G G Russell^[1,6], I Bellantuono^[1]
^[1]Mellanby Centre for Bone Research, Dept of Human Metabolism, University of Sheffield, Sheffield, UK; ^[2]Dept of Paediatric Orthopaedic and Trauma Surgery, Sheffield Children's Hospital, Sheffield, UK; ^[3]Dept of Chemistry, University of Rochester, Rochester, USA; ^[4]Structural Genomics Consortium, University of Oxford, Oxford, UK; ^[5]Dept of Biomedical Sciences, University of Sheffield, Sheffield, UK; ^[6]Nuffield Dept of Orthopaedics, Rheumatology & Musculoskeletal Sciences, University of Oxford, Oxford, UK
- OC21 Resveratrol induction of SirT1-eNOS axis promotes osteoblast activation and increased bone mass in vivo via BMP2
M Zhao^[2], S-Y Ko^[2], R Zhang^[2], H-W Deng^[2], G Gutierrez^[3], S Harris^[3], R Garrett^[3], JR Edwards*^[1]
^[1]Nuffield Dept. of Orthopaedics, Rheumatology and Musculoskeletal Sciences, University of Oxford, Oxford, UK; ^[2]Dept. of Structural & Cellular Biology, Orthopedic Surg, Tulane University, New Orleans, USA; ^[3]Dept. of Cellular and Structural Biology, University of Texas Health Science Centre at San Antonio, San Antonio, USA

16:30-16:50 **Late breaking abstracts**

Chairs:

Tim Arnett (London, UK)/Eugene McCloskey (Sheffield, UK)

- LB1 Multiple tissue targets revealed in a transgenic mouse model for inducible and specific osteocyte ablation
A Aljazzar*^[1], C Scudamore^[2], M Boyd^[1], A Boyde^[3], C Farquharson^[4], B Javaheri^[1], M Prideaux^[5], AA Pitsillides^[1]
^[1]Comparative Biomedical Science, Royal Veterinary College, London, UK; ^[2]Mary Lyon Centre, MRC, Harwell, UK; ^[3]Centre for Oral Growth & Development, Queen Mary's School of Medicine & Dentistry, London, UK; ^[4]Division of Developmental Biology, The Roslin Institute, R(D)SVS, University of Edinburgh, Edinburgh, UK; ^[5]Discipline of Orthopaedics and Trauma, University of Adelaide, Adelaide, Australia
- LB2 Lysyl oxidase drives osteolytic bone lesions in a breast cancer model via RANK ligand independent effects on osteoclasts: a new player in the vicious cycle?
RMH Rumney*^[1], A Agrawal^[1], TR Cox^[2], JT Erler^[2], A Gartland^[1]
^[1]Department of Human Metabolism, University of Sheffield, Sheffield, UK; ^[2]Biotech Research and Innovation Centre, University of Copenhagen, Copenhagen, Denmark
- LB3 Photoperiod induced changes in body weight and leptin level lead to differential bone growth in the Siberian hamster (*Phodopus sungorus*)
M Smith*^[1], FJP Ebling^[2], MP Grevitt^[3], SI Anderson^[1]
^[1]School of Medicine, University of Nottingham, Nottingham, UK; ^[2]School of Life Sciences, University of Nottingham, Nottingham, UK; ^[3]Centre for Spinal Research, Queen's Medical Centre, Nottingham, UK
- LB4 Endochondral ossification, mesenchymal stem cell and Wnt pathway specific loci predict differential skeletal effects in High Bone Mass
CL Gregson*^[1], J Kemp^{[2], [3]}, M Marshall^[3], G Davey Smith^[2], MA Brown^[3], EL Duncan^[3], JH Tobias^[1]
^[1]Musculoskeletal Research Unit, University of Bristol, Bristol, UK; ^[2]MRC Integrative Epidemiology Unit, University of Bristol, Bristol, UK; ^[3]Diamantina Institute, University of Queensland, Brisbane, Australia

16:50-17:00 **Awards**

Chairs:

Tim Arnett (London, UK)/Eugene McCloskey (Sheffield, UK)

17:00 **End of meeting**

**Please note: In the case of company-supported sessions, the companies concerned have had no input into the topics for discussion or the selection of speakers. The Bone Research Society is extremely grateful for their support.*

Poster Presentations

P1

Trabecular orientation in the human femur and tibia and the relationship with lower limb alignment

SA Sampath^[1], S Lewis^{*[2]}, M Fosco^[3], D Tigani^[4]

^[1]Orthopaedic Surgery, The Bluespot Knee Clinic, Lytham, UK; ^[2]Exercise & Sport Science, Manchester Metropolitan University, Crewe, UK; ^[3]Rizzoli Orthopaedic Institute, University of Bologna, Bologna, Italy; ^[4]Orthopaedic Surgery, Santa Maria alle Scotte Hospital, Siena, Italy

P2

Abstract withdrawn

P3

Bone microarchitecture assessed by high resolution peripheral quantitative computed tomography is associated with fracture status in older men and women.

MH Edwards^{*[1]}, KA Ward^[2], C Parsons^[1], J Thompson^[2], EM Dennison^[1,3], C Cooper^[1,4]

^[1]MRC Lifecourse Epidemiology Unit, University of Southampton, Southampton, UK; ^[2]MRC Human Nutrition Research, Cambridge, UK; ^[3]School of Biological Sciences, Victoria University, Wellington, New Zealand; ^[4]NIHR Musculoskeletal Biomedical Research Unit, University of Oxford, Oxford, UK

P4

Retinoic Acid Receptor (RAR) agonists inhibit and RAR antagonists potentiate osteoblastic differentiation of mesenchymal progenitor cells

A.C. Green^{*[1,2]}, E.K. Baker^[1,2], R.A.S Chandraratna^[3], L.E. Purton^[1,2]

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P5

Loading intensity of physical activity is related to muscle strength and bone mineral density in middle-aged women

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High bone mass is associated with radiographic knee osteoarthritis through both BMI-dependent and independent pathways

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P9

The influence of dairy consumption, physical activity and sedentary behaviour on bone mass in Flemish children

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P10

Vitamin D is low in obesity, and this is due to greater volume of distribution.

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The effect of bisphosphonate treatment on sclerostin levels in postmenopausal osteoporosis: the TRIO Study

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The effect of bisphosphonate treatment on osteoclast precursor cells in postmenopausal women with osteoporosis: the TRIO Study

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Population kinetics of MSC's in the development of bio-artificial bone scaffolds S Muller*^[1], L Nicholson^[1], J.R. De Havilland^[1], A Dickinson^[1], X Nong-Wang^[1] ^[1]Institute of Cellular Medicine, Newcastle University, Newcastle, Tyne and Wear, UK

P16

Determinants of bone turnover marker response to three oral bisphosphonate therapies in postmenopausal osteoporosis: the TRIO study

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P17

Ethnic differences in the diurnal rhythms of calcium, phosphate and bone metabolism

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P18

Catching osteoporosis on routine CT scans as an added extra (CORTEX) PM Mayhew*^[1], KE Blesic^[1], L Skingle^[1], F Johannedottir^[1], KES Poole^[1]^[1]Medicine, University of Cambridge, Cambridge, UK

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Low-carbohydrate/high-fat diets do not have negative effects on bone density in female rats in contrast to male rats

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P23

Hyperbaric oxygen therapy suppresses the osteoclast forming ability of peripheral blood monocytes: an *ex-vivo* study

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Effect of prosthesis design on femoral bone remodelling: high-resolution densitometric analysis

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P25

Prediction of local strains for cortical bone at tissue level: Accuracy of a Deformable Image Registration method

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Quantitative comparison of multi-parameters between osteoporosis and health for more reliable diagnosing

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Cyclic hydrostatic pressure stimulates enhanced bone development in the foetal chick femur *in vitro*. JR Henstock*^[1], M Rotherham^[1], AJ El Haj^[1]

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Does bisphosphonate induced microcracks weaken bone strength of osteoporosis patients?: Insight from synchrotron X-ray imaging combine with micromechanical testing

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Inhibition of Rab geranylgeranyl transferase and geranylgeranyl diphosphate synthase by novel phosphonocarboxylate analogues of nitrogen-containing bisphosphonates

FP Coxon*^[1], L Joachimiak^[2], AK Najumudeen^[3], G Breen^[1], J Gmach^[2], C Oetken-Lindhalm^[3], R Way^[1], JE Dunford^[4], D Abankwa^[3], KM Blazewska^[2]

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RMS Accelerations delivered by whole body vibration platforms of differing frequency and amplitude

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Life course dietary patterns and bone: Results from the National Survey for Health & Development (NSHD) 1946 Birth Cohort

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The relationship between sex and age on mandibular bone mineral density and key anatomical sites as a potential key indicator for the use of facial sports protection.

SR Crawford*^[1], A Burden^[1], JM Yates^[2], P Zioupos^[3], K Winwood^[1]

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Regional variation in vibration signal transmission in older adult spines

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P36

Healing of the tendon and bone interface: an in vivo study utilising novel biomaterial/lactoferrin scaffolds

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P37

Development and validation of a subject-specific finite element model of the functional spinal unit

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The role of valve interstitial cell-derived matrix vesicles in calcific aortic valve disease

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Fractures in children with chronic inflammatory and/or disabling conditions: the SNAP study

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Prediction of incident hip fracture with femoral strength assessed by finite element analysis of DXA scans in the osteoporotic fractures in men (MrOS) study

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Bone matrix in skeletal health

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Studies towards an understanding of the phenotype caused by an intriguing disease-causing frameshift mutation in RANK

C Dignan^[1], A Duthie^[1], V Fletcher^[1], D Mellis^[1], A Schulz^[2], A Pangrazio^[3], C Sobacchi^[3,4], M Helfrich^[1], J Crockett*^[1]

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Studies on bone and osteoclasts in patients with Shwachman Diamond syndrome

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Sustained efficacy and tolerability in infants and young children with life-threatening hypophosphatasia treated with asfotase alfa

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Generation of a mouse model for the inducible depletion of macrophages to study chronic inflammatory diseases.

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Shared Ageing Research Models (ShARM): a new facility to support ageing research using aged mouse models

A L Duran*^[1], S Wells^[2], P Potter^[2], T Kirkwood^[3,8], T von Zglinicki^[3,8], A McArdle^[4,8], A Corcoran^[5], Q Meng^[6], G de Haan^[7], I Bellantuono^[1,8]

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P47

Does SirT1 regulate autophagy in the cells of bone and joint? P Sacitharan*^[1], EV Morris^[1], JR Edwards^[1]

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Spatiotemporal patterns of epiphyseal bone loss after spinal cord injury – an investigation using peripheral Quantitative Computed Tomography (pQCT)

S Coupaud*^[1,2], AN McLean^[2], M Purcell^[2], M Fraser^[2], DB Allan^[2]

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Treatment patterns and history of cardiovascular disease/risk factors among osteoporotic patients initiating strontium ranelate in the UK

J Yu*^[1], J Tang^[1], Z Li^[1], S Saijan^[1], M Lion^[2], C O'Regan^[2], A Modi^[1], V Sazonov^[1]

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Ultrastructural studies of osteocytes and their network within bone

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Characterising the muscle-bone unit in growing children and adolescents using high-resolution peripheral quantitative computed tomography and jumping mechanography

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P52

Evaluation of bone fracture and load transfer mechanisms of lower limb injuries from under vehicle explosions

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Preclinical models of myeloma demonstrate inherent variability of bone disease in NOD/SCID gamma mice

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The effect of interleukin's on an in vitro bone model of Alkaptonuria

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Micro-computed tomography for preclinical studies of osteoporosis

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Circulating metal ions following hip replacement affect survival and function of osteoclasts with implications for skeletal bone health

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Investigating mechanisms behind the age-dependent effects of growth hormone

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Site-specific variation in osteoblasts from cancellous bone

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Ultrastructural imaging of bone cells in 3 dimensions

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IDG-SW3 cells in 3D gels differentiate to osteocytes and respond to mechanical loading

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Putting the “why” back into bone archyctecture: nonlinear pattern formation in bone morphogenesis

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MicroCT bone densitometry: context sensitivity, beam hardening and effect of surrounding medium

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Mice expressing a truncated form of PLEKHM1 exhibit a more severe osteopetrosis than PLEKHM1-null mice

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Dexamethasone and oestradiol modulate angiogenesis-related factors in osteocytes: implications for the pathophysiology of osteonecrosis

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Bisphosphonate can rescue cartilage from trauma damage by regulating the metabolic activities of chondrocytes

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Using composite scaffolds to engineer bone templates for *in-vitro* testing

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Altered vesicular trafficking in fibrosis

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A meta-analysis of reference markers of bone turnover for prediction of fracture

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Expression of sclerostin in human osteosarcoma cell lines is associated with osteoblastic differentiation

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Genetic variations as determinants of osteoporosis in an Iranian cohort. SA Dastgheib*^[1], A Gartland^[2], MB Tabei^[3], MD Tear^[4]

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The value of skeletal remains for understanding entheses. C Y Henderson*^[1]

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Late-breaking abstracts

LB5

Alendronate and zoledronic acid inhibit osteoclastogenesis by different mechanisms in mouse marrow cell cultures

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Proximal Humerus Open Reduction Internal Fixation: Does Simple (2part) vs Complex (3/4 part) Fractures Effect Outcome

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LB8

OsteolyticaTM, an image analysis software package, that substantially improves the accuracy of cancer-induced osteolytic lesion measurements compared to other currently available methods

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Game Technology Against Cancer (GTAC) ft OsteolyticonTM

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