

7th International Workshop on Advances in the Molecular Pharmacology and Therapeutics of
Bone and other Musculoskeletal Diseases

St Catherine's College, Oxford

2-5 July 2016

Saturday 2 July

From 11:30 Registration (Porters' Lodge)

12:45 Lunch

13:20 **Welcome and introduction**

Graham Russell (Oxford & Sheffield, UK)

13:30- **Current clinical issues in osteoporosis: update on treatments**
15:00

Chairs: Juliet Compston (Cambridge, UK) / Nuria Guañabens (Barcelona, Spain)

13:30 CURRENT TREATMENTS FOR OSTEOPOROSIS AND RELATED CONDITIONS

Erik Eriksen (Oslo, Norway)

14:00 BENEFITS AND RISKS OF OSTEOPOROSIS TREATMENT

Bo Abrahamsen (Copenhagen, Denmark)

14:30 LONG TERM EFFECTS OF BISPHOSPHONATES IN PAGET'S DISEASE AND
OSTEOPOROSIS

Ian Reid (Auckland, New Zealand)

15:00 Tea

15:30- **New developments in osteoporosis and its treatment**
17:00

Chairs: Adolfo Diez-Perez (Barcelona, Spain) / Dieter Felsenberg (Berlin, Germany)

15:30 SCOOP! BREAKING NEWS FROM A SCREENING STUDY IN OSTEOPOROSIS

Eugene McCloskey (Sheffield, UK)

16:00 IMAGING RESPONSES TO TREATMENT

Ken Poole (Cambridge, UK)

16:30 ARE WE SOLVING OSTEOPOROSIS?

Ego Seeman (Melbourne, Australia)

17:00 Break

17:10- **Introduction to Musculoskeletal Research in Oxford and Keynote Lecture**
18:10 (jointly with ECTS PhD training course)

Chairs: Graham Russell (Oxford and Sheffield, UK) / Tonia Vincent (Oxford, UK)

17:10 MUSCULOSKELETAL RESEARCH IN OXFORD

Graham Russell (Oxford and Sheffield, UK)

17:15 CHANGING PARADIGMS IN OSTEOARTHRITIS

Tonia Vincent (Oxford, UK)

17:30 **Keynote Lecture**

Chairs: Chas Bountra (Oxford, UK) / Gudrun Stenbeck (London, UK)

RARE DISEASES: THE SCOPE, OPPORTUNITIES AND REGULATORY ASPECTS
Matt Warman (Boston, USA)

18:10 End

19:00 *Dinner*

Sunday 3 July

08:45-10:45 **Where are we now with osteoporosis therapies? WNT pathway inhibitors and PTH**

Chairs: Serge Ferrari (Geneva, Switzerland) / Bente Langdahl (Aarhus, Denmark)

08:45 THE WNT PATHWAY
Michaela Kneissel (Novartis, Basle, Switzerland)

09:15 TARGETING WNT INHIBITORS: LESSONS FROM PRECLINICAL STUDIES
David Ke (UCB, Slough, UK)

09:45 TARGETING SCLEROSTIN TO INCREASE BONE FORMATION
Cesar Libanati (UCB, Brussels, Belgium)

10:15 ADVANCES IN PARATHYROID HORMONE THERAPIES: ABALOPARATIDE
Gary Hattersley/Lorie Fitzpatrick (Radius, Waltham, USA)

10:45 *Coffee*

11:15-12:45 **Where are we now with osteoporosis therapies? Cathepsin K inhibition**

Chairs: Richard Keen (London, UK) / Stuart Ralston (Edinburgh, UK)

11:15 CATHEPSIN K INHIBITION AS A THERAPEUTIC TARGET
Anne de Papp (Merck, Whitehouse Station, USA)

11:45 MECHANISMS OF BONE FORMATION DURING CATHEPSIN K INHIBITION
Serge Ferrari (Geneva, Switzerland)

12:15 AN UPDATE ON ODANACATIB
Michael McClung (Oregon, USA)

12:45 *Lunch*

14:00-15:00 **Emerging opportunities for new therapies**

Chairs: Jill Cornish (Auckland, New Zealand) / Jonathan Reeve (Oxford, UK)

14:00 THE EMERGING ROLE OF RAMPS AND THEIR MODULATION
Tim Skerry (Sheffield, UK)

14:20 THYROSTIMULIN REGULATES OSTEOBLASTIC BONE FORMATION DURING EARLY SKELETAL DEVELOPMENT
Duncan Bassett (London, UK)

14:40 SELENIUM: DOES THE ANSWER LIE IN THE SOIL?
Richard Eastell (Sheffield, UK)

15:00 *Tea*

15:30-17:10 **Therapeutic directions in rare genetic diseases
(jointly with ECTS PhD training course)**

Chairs: Kassim Javaid (Oxford, UK) / Andrew Wilkie (Oxford, UK)

15:30 INTRODUCTION AND UPDATE ON OSTEOGENESIS IMPERFECTA
Francis Glorieux (Montreal, Canada)

- 15:50 GENETIC APPROACHES TO IDENTIFYING DRUG TARGETS: ENU MUTAGENESIS IN SKELETAL RESEARCH
Paul Potter (Harwell, UK)
- 16:10 ENZYME REPLACEMENT THERAPY: LESSONS FROM HYPOPHOSPHATASIA IN CHILDHOOD
Michael Whyte (St Louis, USA)
- 16:30 MINERALIZATION DEFECTS IN NEUROFIBROMATOSIS TYPE 1 AND THERAPEUTIC IMPLICATIONS
Florent Elefteriou (Houston, USA)
- 16:50 NOVEL APPROACHES TO TREATING RARE BONE DISEASES
Melita Irving (London, UK)
- 17:10 Break
- 17:20 **Keynote lecture**
(jointly with ECTS PhD training course)
- Chair: Graham Russell (Oxford and Sheffield, UK)
- OXYGEN SENSING IN ANIMAL CELLS: A NEW THERAPEUTIC OPPORTUNITY?
Peter Ratcliffe (Oxford, and Crick Institute, London, UK)
- 18:00 End
- 18:00-19:00 Poster viewing (ECTS PhDs and MolPharm)
Junior Common Room Bar Annex (next to Dining Hall)
- 19:00 *Dinner*

Monday 4 July

- 08:45-10:15 **Therapeutic directions in rare genetic diseases: Fibrodysplasia ossificans progressiva**
Chairs: Eileen Shore (Philadelphia, USA) / Jim Triffitt (Oxford, UK)
- 08:45 FIBRODYSPLASIA OSSIFICANS PROGRESSIVA: A NEW APPROACH
Maurizio Pacifici (Philadelphia, USA)
- 09:15 BMP/TGF-BETA PATHWAYS AS THERAPEUTIC TARGETS IN BONE BIOLOGY AND CANCER
Alex Bullock (Oxford, UK)
- 09:45 RECEPTOR MUTATIONS AND ACTIVIN ACTION IN FIBRODYSPLASIA OSSIFICANS PROGRESSIVA
Aris Economides (Regeneron, Tarrytown, USA)
- 10:15 *Coffee*
- 10:45-12:35 **Therapeutic directions in rare genetic diseases: Phosphate and calcification disorders**
Chairs: Tim Arnett (London, UK) / Raj Thakker (Oxford, UK)
- 10:45 TREATING INHERITED PHOSPHATE DISORDERS: FGF₂₃ AND OTHER TARGETS
Thomas Carpenter (New Haven, USA)
- 11:15 ENPP₁ ENZYME REPLACEMENT THERAPY FOR GENERALISED ARTERIAL CALCIFICATION THERAPY
Kim Askew (Alexion, Lexington, USA)
- 11:45 REGULATION OF CALCIFICATION PROCESSES
Isabel Orriss (London, UK)
- 12:05 A BMP6 CONTAINING BONE GRAFT SUBSTITUTE
Lovorka Grgurevic (Zagreb, Croatia)
- 12:20 NOVEL THERAPY FOR BONE REPAIR – CLINICAL STUDIES
Slobodan Vukicevic (Zagreb, Croatia)
- 12:35 THE ROLE OF EPIGENETICS IN THE DIFFERENTIATION OF MESENCHYMAL STEM CELLS AND OSTEOBLASTS
Martin Philpott (Oxford, UK)
- 12:55 *Lunch*
- 14:00-15:10 **Muscle**
Chairs: Cyrus Cooper (Oxford and Southampton, UK) / Paul Wordsworth (Oxford, UK)
- 14:00 INTRODUCTION: "SARCOPENIA"
Cyrus Cooper (Oxford and Southampton, UK)
- 14:10 THERAPEUTIC APPROACHES TOWARDS MUSCLE REGENERATION
Gary Krishnan (Eli Lilly, Indianapolis, USA)
- 14:40 RESTORING MUSCLE HEALTH IN MUSCLE WASTING DISEASES
Estelle Trifilieff (Novartis, Basle, Switzerland)
- 15:10 *Tea*

- 15:30-17:10 **Highlights in bone biology and disease (jointly with ECTS PhD training course)**
Chairs: Jack Martin (Melbourne, Australia) / John Potts (Boston, USA)
- 15:30 INTRODUCTION: HISTORICAL PERSPECTIVE
John Potts (Boston, USA)
- 15:40 RECENT INSIGHTS INTO PTH ACTION AND THERAPEUTIC POTENTIAL
Hank Kronenberg (Boston, USA)
- 16:10 UPDATE ON PAGET'S DISEASE: GENETICS AND TREATMENTS
Stuart Ralston (Edinburgh, UK)
- 16:40 CHALLENGES IN PAIN RESEARCH: ANGIOTENSIN II TYPE 2 RECEPTOR ANTAGONISTS: PAIN RELIEF & BEYOND
Tom McCarthy (Molecule 2 Medicine, UK)
- 17:00 Break
- 17:05 **Keynote Lectures**
Chair: Gordon Duff (Oxford, UK)
- 17:05 GENETICS, EPIGENETICS AND THE MICROBIOME
Tim Spector (London, UK)
- 17:35 STRATEGIES FOR ENHANCING DRUG DISCOVERY
Chas Bountra (Oxford, UK)
- 18:00-19:00 Poster viewing (ECTS PhDs and MolPharm)
Junior Common Room Bar Annex (next to Dining Hall)
- 19:00 *Dinner*
- 20:15 *Walking tour: the University, book and film locations, historic pubs and their memorable patrons*

Tuesday 5 July

- 08:45-10:05 **Ageing and epigenetics: mechanisms and opportunities for intervention**
Chairs: James Edwards (Oxford, UK) / Ken Lyles (Durham, USA)
- 08:45 THE MOLECULAR AND CELLULAR HALLMARKS OF AGEING
Carlos López-Otin (Oviedo, Spain)
- 09:15 IS "AGEING" A DRUGGABLE TARGET?
Ilaria Bellantuono (Sheffield, UK/MouseAge COST Action)
- 09:40 EFFECT OF ANTIRESORPTIVE DRUGS ON LIFESPAN
Jacqueline Center (Sydney, Australia)
- 10:05-11:05 **Cancer and bone: mechanisms underlying the formation of bone metastases**
Chairs: Claire Edwards (Oxford, UK) / Dominique Heymann (Sheffield, UK)
- 10:05 TUMOUR CELL DORMANCY AND BONE METASTASIS: THE IMPORTANCE OF THE NEIGHBOURHOOD
Peter Croucher (Sydney, Australia)
- 10:35 THE GENESIS OF BONE METASTASES
Philippe Clézardin (Lyon, France)
- 11:05 *Coffee*
- 11:20-12:55 **Cancer-related bone disease: mechanisms and treatments**
Chairs: Andy Chantry (Sheffield, UK) / Larry Suva (College Station, USA)
- 11:20 AN UPDATE ON MYELOMA RESEARCH: MECHANISMS AND TREATMENTS
David Roodman (Indianapolis, USA)
- 11:50 CURRENT AND EMERGING TREATMENTS FOR MANAGING CANCER-RELATED BONE DISEASE
Rob Coleman (Sheffield, UK)
- 12:20 IMMUNO MODULATION WITH BISPHOSPHONATES
Dieter Kabelitz (Kiel, Germany)
- 12:40 ANTISCLEROSTIN AND TUMOUR-INDUCED BONE DISEASE
Michelle McDonald (Sydney, Australia)
- 12:55 *Lunch*
- 14:00-15:30 **Bisphosphonates: novel approaches to targeting and drug delivery**
Chairs: Peter Croucher (Sydney, Australia) / Claus Glüer (Kiel, Germany)
- 14:00 UPDATE ON BISPHOSPHONATES: BONE TARGETING AND DRUG DELIVERY
Hal Ebetino (Rochester, USA)
- 14:20 NEW DIRECTIONS IN THE BIO-ORGANIC CHEMISTRY OF BISPHOSPHONATES
Robert Boeckman (Rochester, USA)
- 14:40 USING BISPHOSPHONATES FOR DRUG DELIVERY TO BONE
Brendan Boyce (Rochester, USA)

- 15:00 BIPHOSPHONATES AND LIPOSOMES FOR DRUG DELIVERY
Oula Penate Medina (Kiel, Germany)
- 15:15 BIPHOSPHONATES TO TARGET BONE METASTASES
Sanjay Tiwari (Kiel, Germany)
- 15:30 *Tea*
- 15:45-
16:30 **Bisphosphonates: novel chemical approaches and pharmacological uses**
Chairs: Fraser Coxon (Aberdeen, UK) / Hal Ebetino (Rochester, USA)
- 15:45 STUDIES ON TERPENOID INHIBITORS OF MEVALONATE PATHWAY ENZYMES:
APPLICATIONS TO CANCER
Ray Hohl (Terpenoid, Hershey, USA)
- 16:05 SYNTHESIS AND APPLICATIONS OF NOVEL BIPHOSPHONATES FOR FLUORESCENCE
AND PET IMAGING
Charles McKenna (Los Angeles, USA)
- 16:20 DO BIPHOSPHONATES REDUCE INFLAMMATION POST-BURN?
Gordon Klein (Galveston, USA)
- 16:30 *Break*
- 17:00-
17:30 **Novel regulators**
Chairs: Nick Athanasou (Oxford, UK) / Agi Grigoriadis (London, UK)
- 17:00 MICRO-RNA BASED TREATMENT OF CANCER-INDUCED BONE DISEASE
Eric Hesse (Hamburg, Germany)
- 17:20 MANIPULATING AGEING PATHWAYS
Pradeep Sacitharan (Oxford, UK)
- 17:30-
18:15 **Current research in myeloma**
Chairs: Silvia Marino (Sheffield, UK) / David Roodman (Indianapolis, USA)
- 17:30 MYELOMA MODELS FOR DRUG EVALUATION
Shelly Lawson (Sheffield, UK)
- 17:40 USING BIPHOSPHONATES TO DELIVER BORTEZOMIB
Lianping Xing (Rochester, USA)
- 17:50 METFORMIN AND CANCER-INDUCED BONE DISEASE
Claire Edwards (Oxford, UK)
- 18:00 EPIGENETICS IN MYELOMA
Udo Oppermann (Oxford, UK)
- 18:15 *Close*
- 19:00 *Dinner*

Wednesday 6 July

Public engagement event at the Kennedy Institute

Location: Bernard Sunley Lecture Theatre, Kennedy Institute, Old Road Campus, Headington, Oxford OX3 7FY

To include:

13:00-13:30 NOVEL INSIGHTS INTO PTH AND ANABOLIC SIGNALING IN BONE

Eric Hesse

Professor and Director of Research, Department of Trauma, Hand and Reconstructive Surgery, Orthopedic Trauma Surgeon
University of Hamburg, Germany

13:30-14:00 LESSONS FROM A LIFE IN MEDICAL RESEARCH: PERSPECTIVES ON ACADEMIC CAREER DEVELOPMENT

John Potts

Distinguished Jackson Professor of Clinical Medicine
Harvard Medical School and Massachusetts General Hospital, Endocrine Unit, Boston, USA

All welcome to attend