

Nick Athanasou

Nick Athanasou is Professor of Musculoskeletal Pathology in the University of Oxford. He has written widely on osteoclast pathobiology and cellular and humoral mechanisms of pathological bone resorption, including tumour osteolysis. Other interests include the pathogenesis and diagnosis of primary bone tumours, particularly giant cell tumour of bone, and the development of new markers to diagnose neoplastic and non-neoplastic diseases of bone, joint and soft tissue.

Paolo Bianco

Paolo Bianco is Professor of Pathology and Director, Anatomic Pathology, at Sapienza Università di Roma, Italy, and Chief, Stem Cell Laboratory at San Raffaele Biomedical Science Park of Rome. He works on skeletal diseases and on non-hematopoietic stem cells found in the bone marrow stroma. His earlier work focused among other things on the crucial role of stem cell for modeling genetic diseases of the skeleton, in particular fibrous dysplasia (FD, OMIM#174800), in vitro and in vivo. These studies provided significant advances in the understanding of the disease pathogenesis. His more recent work is directed at identifying and characterizing postnatal progenitors in the human bone marrow and skeletal muscle as subendothelial cells (see Sacchetti et al, Cell 2007, Dellavalle et al Nature Cell Biology 2007, Bianco et al Cell Stem Cell 2008), and on their subsequent use in i) genomic studies of the phenotype-genotype correlation in FD, ii) preclinical models of cell therapy and gene therapy both in vitro and in ad hoc generated murine models of disease, iii) models of cell therapy in bone and skeletal muscle diseases. Dr Bianco has published over 130 peer-reviewed articles.

Ray Boot-Handford

Ray Boot-Handford received his PhD from University College, London and was a postdoctoral fellow with Mike Grant in Manchester and Darwin Prockop in Philadelphia. He is a Professor of Biochemistry in the Wellcome Trust Centre for Cell-Matrix Research, Faculty of Life Sciences in Manchester. His current research focuses upon characterising disease mechanisms associated with connective tissue disorders and the evolution of the metazoan extracellular matrix.

Ann Canfield

I graduated with a degree in Biochemistry from Manchester and then completed a PhD under the supervision of Professor Mike Grant in Medical Biochemistry. My Post-doctoral studies took me to the Paterson Institute for Cancer Research, where my research focussed on the regulation of angiogenesis by specific matrix molecules. I joined the Wellcome Trust Centre for Cell-Matrix Research at the University of Manchester as a Junior Research Fellow in 1993 and was appointed as a Lecturer in 1996, Senior Lecturer in 2000 and Reader in 2007. My main research interests are in the biology and pathology of blood vessels. In particular, I have a long-standing interest in the multi-lineage potential of vascular pericytes and smooth muscle cells and in elucidating the mechanisms by which the uncontrolled oste/chondro differentiation of these cells can result in several pathologies including the calcification of blood vessels. In addition, as a member of the UK Centre for Tissue Regeneration, my research is also focussed on using specific matrix molecules to generate small diameter vascular grafts with a non-thrombogenic coating of endothelial cells.

Yuti Chernajovsky

Yuti Chernajovsky is ARC Professor of Rheumatology and Head of Department, Bone and Joint Research Unit at Barts and The London, Queen Mary's School of Medicine and Dentistry, University of London. He trained as a molecular biologist, at The Weizmann

Institute of Science in Israel, his research activities have included the cloning of several interferons, interleukins and their receptors. He has contributed to the cloning and development of interferon beta as a therapeutic agent and the use of suicidal genes for cancer gene therapy. Current research interests include the development of gene transfer strategies for the treatment of rheumatoid arthritis and other autoimmune diseases via molecular design and cellular engineering. He is member of the editorial board of Gene Therapy and Arthritis Research and Therapy.

Ian Clark

Ian Clark graduated from Bristol University, UK with a BSc in Biochemistry. He went on to complete a PhD in the Rheumatology Research Unit at Addenbrooke's Hospital, Cambridge, UK developing immunoassays to measure matrix metalloproteinases (MMPs) and their inhibitors, the TIMPs. With help from the Arthritis Research Campaign (**arc**), he spent a year in Dartmouth Medical School, USA learning about MMP gene regulation, then returned to the UK as an **arc** Postdoctoral Fellow to apply these skills to the TIMP-1 gene. In 1996 he moved to UEA, Norwich UK to build his own research team in this general area. In 2001, he spent a year in the Respiratory and Inflammation Dept. of AstraZeneca Pharmaceuticals, working on osteoarthritis and gaining an understanding of the industrial side of science. He now holds the Chair of Musculoskeletal Biology with research interests primarily concerned with the function and regulation of metalloproteinases in arthritis and other musculoskeletal diseases.

Thomas Clemens

Dr. Thomas Clemens is currently a Professor in the Department of Pathology at the University of Alabama at Birmingham. Dr. Clemens received his Ph.D. in Biochemistry from the University of London in London, England and completed postdoctoral training as a Research Fellow in Medicine at Massachusetts General Hospital. He was an Associate Professor in Medicine at Cedars Sinai Medical Center where he founded a Masters program in Biomedical Sciences. He was a Professor of Medicine at the University of Cincinnati where he directed the Pathobiology and Molecular Medicine graduate program. Dr. Clemens' research is focused on identification of the cellular and molecular mechanisms, which control osteoblast activity. He has authored 119 original publications, and a number of editorials and book chapters. He has served as a council member of American Society of Bone and Mineral Research and was the program co-chair for the 2002 national meeting. He is the current Editor-in-Chief of the *Journal of Bone and Mineral Research*.

Juliet Compston

Juliet Compston is Professor of Bone Medicine and Honorary Consultant Physician at the University of Cambridge School of Clinical Medicine. Among other activities, she is currently a Member of the Board of the International Osteoporosis Foundation, Member of the Board of the International Bone and Mineral Society, Chair of the UK National Osteoporosis Guidelines Group (NOGG), Chair of the Publications Committee of the International Bone and Mineral Society, Project Leader of European Commission/International Osteoporosis Foundation Call to Action for Osteoporosis and Chair of European Union Osteoporosis Consultation Panel. She was awarded the National Osteoporosis Society Kohn Foundation Award 2006 and International Bone and Mineral Society John G Haddad Jr Award in 2009.

Cyrus Cooper

Cyrus Cooper is Professor of Rheumatology and Director of the MRC Epidemiology Resource Centre at the University of Southampton, and Norman Collisson Chair of Musculoskeletal Science at the University of Oxford. He leads an internationally competitive programme of research into the epidemiology of musculoskeletal disorders, most notably osteoporosis. His key research contributions have been: 1) discovery of the developmental influences which contribute to the risk of osteoporosis and hip fracture in late adulthood; 2) demonstration that maternal vitamin D insufficiency is associated with sub-optimal bone mineral accrual in childhood; 3) characterisation of the definition and incidence rates of vertebral fractures; 4) leadership of large pragmatic randomised controlled trials of calcium and vitamin D supplementation in the elderly as immediate preventative strategies against hip fracture. He is currently President of the Bone Research Society of Great Britain, and Chairman of the Committee of Scientific Advisors, International Osteoporosis Foundation. He has published extensively (over 350 publications) on osteoporosis and rheumatic disorders and pioneered clinical studies on the developmental origins of peak bone mass.

Peter Croucher

Professor Peter Croucher graduated with a BSc in Zoology from University College Cardiff in 1987 and completed a PhD at the University of Wales College of Medicine, Cardiff, in 1990. He undertook post-doctoral training in the Department of Medicine at the University of Cambridge and in the Department of Human Metabolism and Clinical Biochemistry at the University of Sheffield before being awarded a five-year Bennett Senior Fellowship by the Leukaemia Research Fund in 1997. In 2001 he joined the University of Oxford Institute of Musculoskeletal Sciences as a Senior Research Fellow before being appointed in 2003 to his current position as Professor of Bone Biology at the University of Sheffield. He is currently Head of the Academic Unit of Bone Biology and Head of the Department of Human Metabolism. Professor Croucher's principal interests are in understanding the cellular and molecular mechanisms responsible for regulating tumour induced bone diseases such as multiple myeloma.

Leif Dahlberg

Leif Dahlberg is Associate Professor at the Faculty of Medicine, Lund University and Staff Surgeon at the Department of Orthopaedics, Malmö University Hospital, Sweden. His research interests are in Joint Cartilage Monitoring in Health and Disease and Osteoarthritis and Cartilage.

Adam Engler

Adam J Engler is an Assistant Professor of Bioengineering at the University of California, San Diego. His research focuses on how the intrinsic properties of the extracellular matrix regulate embryonic and adult stem cell differentiation as well as heart development. Dr. Engler earned his B.S.E. and Ph.D. degrees in bioengineering and mechanical engineering at the University of Pennsylvania before completing a postdoctoral fellowship at Princeton University's Department of Molecular Biology, funded by the National Cancer Institute. Dr. Engler is the 2008 recipient of the Rupert Timpl and Rita Schaffer Young Investigator Awards from the International Society for Matrix Biology and the Biomedical Engineering Society, respectively.

Tim Hardingham

Professor Tim Hardingham was the founding Director of the UK Centre for Tissue Engineering and is Professor of Biochemistry in the Wellcome Trust Centre for Cell-Matrix Research (www.wtccmr.man.ac.uk), Faculty of Life Sciences, University of Manchester, UK.

Professor Hardingham was previously the Head of Biochemistry at the Kennedy Institute of Rheumatology in London and is the current Chairman of the Arthritis Research Campaign (UK) Research Grants Committee. He is a past member of the Molecular and Cellular Medicine Board of the Medical Research Council (UK) and also immediate past Chairman of the British Society for Matrix Biology and member of Council of the British Society for Rheumatology and has several awards and honours, including the Colworth Medal of The Biochemical Society (1978), the Roussel International Award for Basic Research in Osteoarthritis (1989) and the Carol Nachman International Prize for Research in Rheumatology (1991). Professor Hardingham has been a member of ad hoc NIH study sections on Tissue Engineering and Bioengineering Research Partnerships (1999-2003). He is a founding Trustee of the newly formed International Society for Hyaluronan Sciences and currently co-heads the Tissue Regeneration Section of the Faculty of 1000 Medicine. He was elected (2001) to the Governing Board of Tissue Engineering Society International (TESi) and was European Vice-President of TESI (2003-2005) and on TERMIS-EU Chapter board (2005-2008).

Professor Hardingham's research interests are in the biology and pathology of cartilage and musculoskeletal tissues and the degenerative processes in osteoarthritis and other joint diseases. He has long standing research interests in the physical properties and biological functions of extracellular matrices. Current research is focussed on the biology of chondrocytes and the differentiation of adult and embryonic stem cells and their application in tissue engineering of cartilage and other musculoskeletal tissues. Professor Hardingham also takes a lead in promoting research in the broader applications of tissue engineering in medicine.

Marie-Hélène Lafage-Proust

Pr MH Lafage-Proust, MD, PhD teaches Cell Biology at the Medical School of the University of Lyon, at Saint-Etienne, France. She joined the INSERM 890 team in 1994, after a postdoctoral Fellowship with Gideon Rodan at Merck RL. Her main research interests are the effects of mechanical load on bone. Recently, she focused on the involvement of bone microvascularisation in bone remodelling. She was trained as a rheumatologist at the Medical School of Bordeaux University. She studied bone histomorphometry in Pr Meunier's laboratory in Lyon. Ever since, she has been responsible for the histological diagnosis of metabolic bone diseases. As a clinician, she currently takes care of patients with metabolic bone diseases, in the Rheumatology Department of St-Etienne University Hospital.

Nigel Loveridge

Nigel Loveridge gained his PhD (Biochemistry) from Brunel University in 1981. He has had a lifelong background in the biological sciences, particularly musculoskeletal research and has worked in London (Kennedy Institute), Montreal (McGill University), Zurich (University of Zurich), Aberdeen (Rowett Research Institute) before settling in Cambridge in 1994 where he is a Principal Research Associate (Reader) in the Department of Medicine and Editor in Chief of Cell Biochemistry and Function. He has over 100 publications in areas such as endocrinology, longitudinal growth and most recently the microstructure, material properties and cellular activities associated with fragility in the proximal femur. His current interests include the role of osteocytes in bone remodeling in health and disease.

Karen Lyons

Karen Lyons is Professor of Molecular Cell and Developmental Biology at the University of California, Los Angeles. She holds a joint appointment in the Department of Orthopaedic Surgery at UCLA. Prior to joining UCLA, she completed postdoctoral studies in the laboratory of Brigid Hogan at Vanderbilt University. Her major interests are in signaling pathways controlling growth plate and bone formation. In particular, her studies have focused on the roles of Bone Morphogenetic Proteins (BMPs) in the developing growth plate. A second major focus has been on the roles of the members of the matricellular proteins connective tissue growth factor (CTGF/CCN2), Cyr61/CCN1, and Elm1/CCN4 in cartilage, bone and vascular development. Dr. Lyons' studies are funded by the National Institutes for Health (NIAMS), Arthritis Foundation, and Scleroderma Foundation. She is a member of the Board of Counselors for the American Society for Matrix Biology.

Bjorn Olsen

Dr. Bjorn R. Olsen, Hersey Professor of Cell Biology at Harvard Medical School and Dean for Research and Professor of Developmental Biology at the Harvard School of Dental Medicine, is internationally recognized for his contributions to the fields of extracellular matrix biology and skeletal genetics, cell and developmental biology.

His research has furthered our understanding of diseases from dwarfism to congenital vascular anomalies, osteoporosis, osteoarthritis, corneal dystrophy and retinal degeneration. His studies have uncovered fundamental roles of collagens, transcription factors and receptors that affect not only skeletal development, but also angiogenesis and blood vessel morphogenesis.

His honors include election to the Norwegian Academy of Sciences and ScanBalt Academy, honorary doctoral degrees from the University of Oslo and University of Medicine and Dentistry of New Jersey, the Humboldt Research Award from Germany, the H.C. Jacobæus Prize, and the Senior Research prize of the American Society of Matrix Biology.

Mats Paulsson

Mats Paulsson was trained in medicine and biochemistry at the University of Lund and performed his doctoral work on cartilage matrix proteins in the group of Dick Heinegard.

1983 he moved as a postdoc to Rupert Timpl's lab at the Max-Planck-Institute for Biochemistry in Munich and was there introduced to the basement membrane field. He started his first own group at the Biocenter of the University of Basel in 1986, was later at the University of Berne and was appointed to a chair of biochemistry at the University of Cologne in 1995. His work has focussed on structure and assembly of the extracellular matrix in cartilage and basement membranes, in recent years with an increasing focus on the role of extracellular matrix proteins in inherited disease. He has been a member of the editorial board of the Biochemical Journal and, at present, the Journal of Biological Chemistry. At the University of Cologne he serves on the executive boards of the Center for Molecular Medicine, the Graduate School for Biological Sciences and the Collaborative Research Center on Molecular Mechanisms Regulating Skin Homeostasis.

David Reid

Professor David M Reid holds a personal chair of Rheumatology at the University of Aberdeen and is also Head of the Division of Applied Medicine at the School of Medicine & Dentistry.

He has over 250 original papers and reviews, largely on his current research interests which include the utility of bone mass assessment, assessment of risk of fracture, secondary

osteoporosis and the assessment of long-term disease activity and drug adverse effects in rheumatic diseases.

He is the Chairman of the Board of Trustees of the UK National Osteoporosis Society (NOS). He was a member of the Writing Groups for the Scottish Integrated Guidelines Network on the Management of Osteoporosis (publication in 2003) and Royal College of Physician's Guidelines on Glucocorticoid-Induced Osteoporosis published in December 2002. Recently he chaired groups who have published the Arthritis and Musculoskeletal Alliance *Standards of Care for Metabolic Bone Diseases* and a UK expert group who have produced Guidance on the *Management of Cancer Treatment Induce Bone Loss*.

Henry Roehl

As a graduate student, Henry Hamilton Roehl worked with *C.elegans* and made several important discoveries into the mechanism of Notch signalling that resulted in publications in *Nature* and *EMBO Journal*. As a postdoc he continued to analyse signalling pathways, switching to the FGF pathway and using zebrafish. He identified two new components of the FGF pathway resulting in a paper being published in *Current Biology*. While still a postdoc, he performed a large-scale forward genetic screen and isolated more than 40 mutants that affect different aspects of cranial musculoskeletal development. In 2002, he started his own laboratory as a lecturer in the Centre for Developmental and Biomedical Genetics at the University of Sheffield. He initially analysed three zebrafish skeletal mutants required for heparin sulphate synthesis resulting in publications in *Neuron* and *PLoS Genetics*. More recently, he has focused on how developmental signalling pathways coordinate differentiation of osteoblasts.

Irving Shapiro

Dr. Shapiro, received a degree in Dental Surgery (BDS) from the University of London, and the degree of Ph.D. in Biochemistry from the University of London in 1968. He joined the faculty of the University of Pennsylvania (Penn) in 1969 and rose to the rank of Full Professor in 1976. He served as Chairperson of the Department of Biochemistry in the School of Dental Medicine for 9 years; in 1997, with faculty from the Department of Bioengineering at the School of Engineering at Penn, he was instrumental in forming the Center for Bioactive Material Research. During this time period Dr. Shapiro had the honor of chairing two separate Gordon Conferences (Bones and Teeth and Biomineralization) and organizing the First International Conference on the Growth Plate. In 2001, Dr. Shapiro was recruited by the Department of Orthopaedic Surgery at Thomas Jefferson University to lead the Division of Orthopaedic Research. Currently, he is Professor of Orthopaedic Surgery, Biochemistry and Molecular Biology and Director of the Tissue Engineering and Regenerative Medicine Graduate Training Program at Thomas Jefferson University.

Current research activities now being pursued by Dr. Shapiro can be summarized as follows:

(a) Fate of the hypertrophic chondrocyte in the endochondral growth plate. The current project is part of a long term interest in the mechanism of chondrocyte hypertrophy and mineralization. Having shown that cells in the epiphysis end their life history through the induction of apoptosis, he has recently shown that prior to apoptosis the chondrocytes assume a new state, autophagy. (b) Creating bioactive surfaces for repair of fractured and infected bone. The goal of this work is to develop a new generation of "smart" implants that promote osteogenesis and prevent bacterial infection. This study relies heavily on the development of new chemical techniques to generate linkages between metals and bioactive molecules and uses imaging techniques such as mass spec analysis, micro-tomography light, electron and X-ray imaging to evaluate efficacy of healing. (c) exploring the origin, form and function of cells of the intervertebral disc. Following a bout of lower back pain, Dr. Shapiro directed his

research to determining if stem cells exist in the disc, and whether they can be used to repopulate the nucleus pulposus. His more recent work is aimed at learning how the notch signaling system regulates intervertebral disc proliferation and differentiation. When not working (a rare occurrence), he enjoys playing with wife, daughter and grandchildren, cooking very hot curries and tap dancing.

Jonathan Tobias

Jonathan Tobias is Professor of Rheumatology at the University of Bristol, and consultant rheumatologist at North Bristol Trust. Following undergraduate studies in medicine at Cambridge University and London University from where he qualified in 1984, he completed MD and PhD theses in bone biology in 1990 and 1994, at St George's Hospital in London. He was appointed Consultant Senior Lecturer in Bristol in 1995, and since 2008 has headed up the Academic Rheumatology Unit at the Avon Orthopaedic Centre. He manages a diverse research program into the causes and treatment of osteoporosis. He has extensive clinical experience in treating patients with osteoporosis, and in running DXA-based osteoporosis diagnostic services. He serves on the editorial board of *Calcified Tissue International*, the program committee of the National Osteoporosis Society, and the research committee of the Arthritis Research Campaign. He is currently president elect of the Bone Research Society.

Rob van 't Hof

Rob van 't Hof originally studied Biology at the University of Utrecht in the Netherlands. During his PhD at the University of Leiden, he developed an interest in the regulation of osteoclast formation and activity, with a special interest in the cross-talk between osteoblasts and osteoclasts. After his PhD, he moved to the University of Aberdeen to study the effects of Nitric Oxide (NO) on bone cells in the group of prof. Ralston. In July 2005 Dr. van 't Hof moved to the University of Edinburgh to take up his current post as senior lecturer in the Rheumatic Diseases Unit. His main projects here involve the regulation of bone turnover by the central nervous system, and the development of small molecule inhibitors of bone resorption and inflammation.